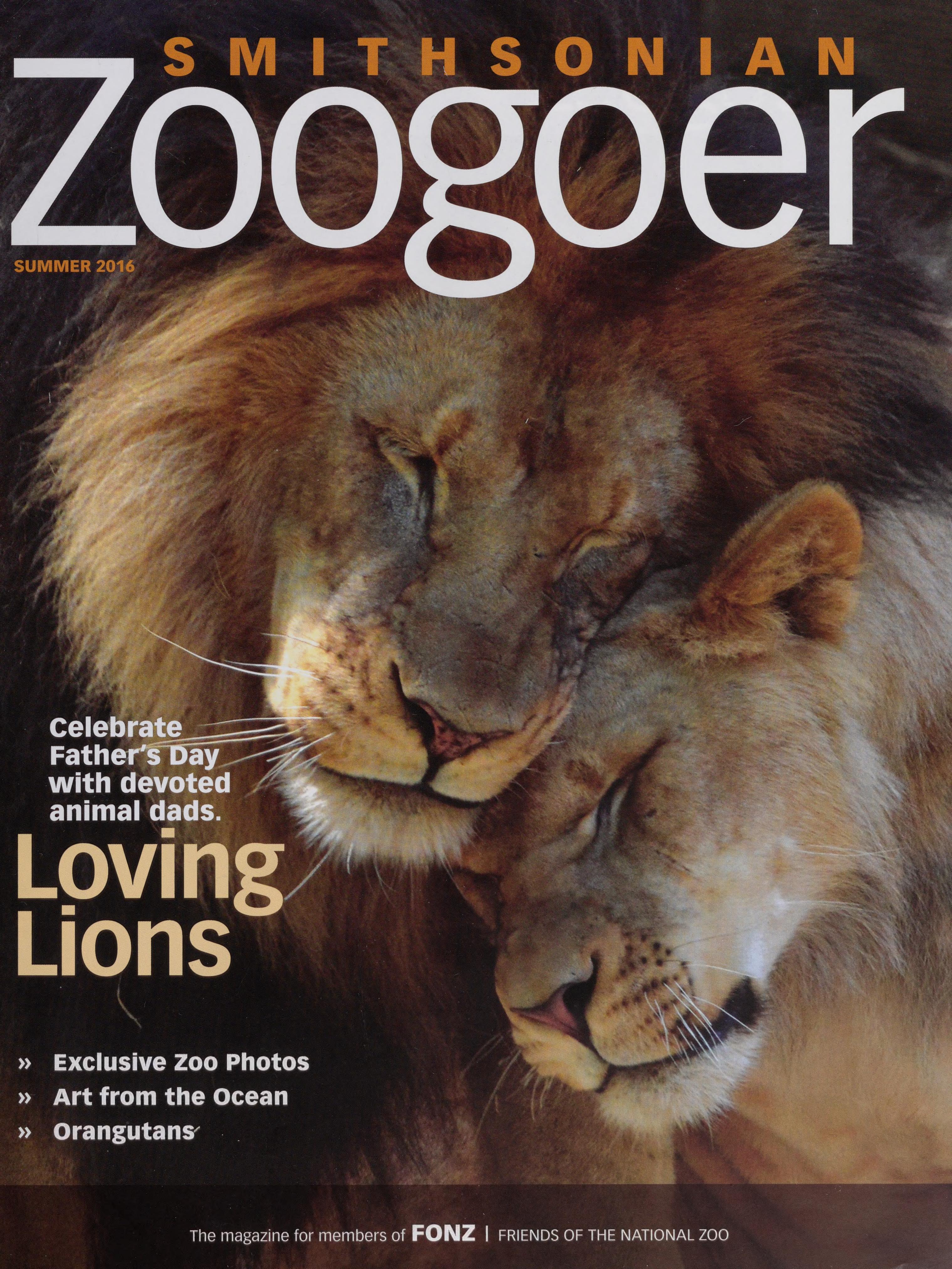


SMITHSONIAN

zoogoer

SUMMER 2016



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Father's Day
with devoted
animal dads.

Loving Lions

- » Exclusive Zoo Photos
- » Art from the Ocean
- » Orangutans

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times could
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LGlisson
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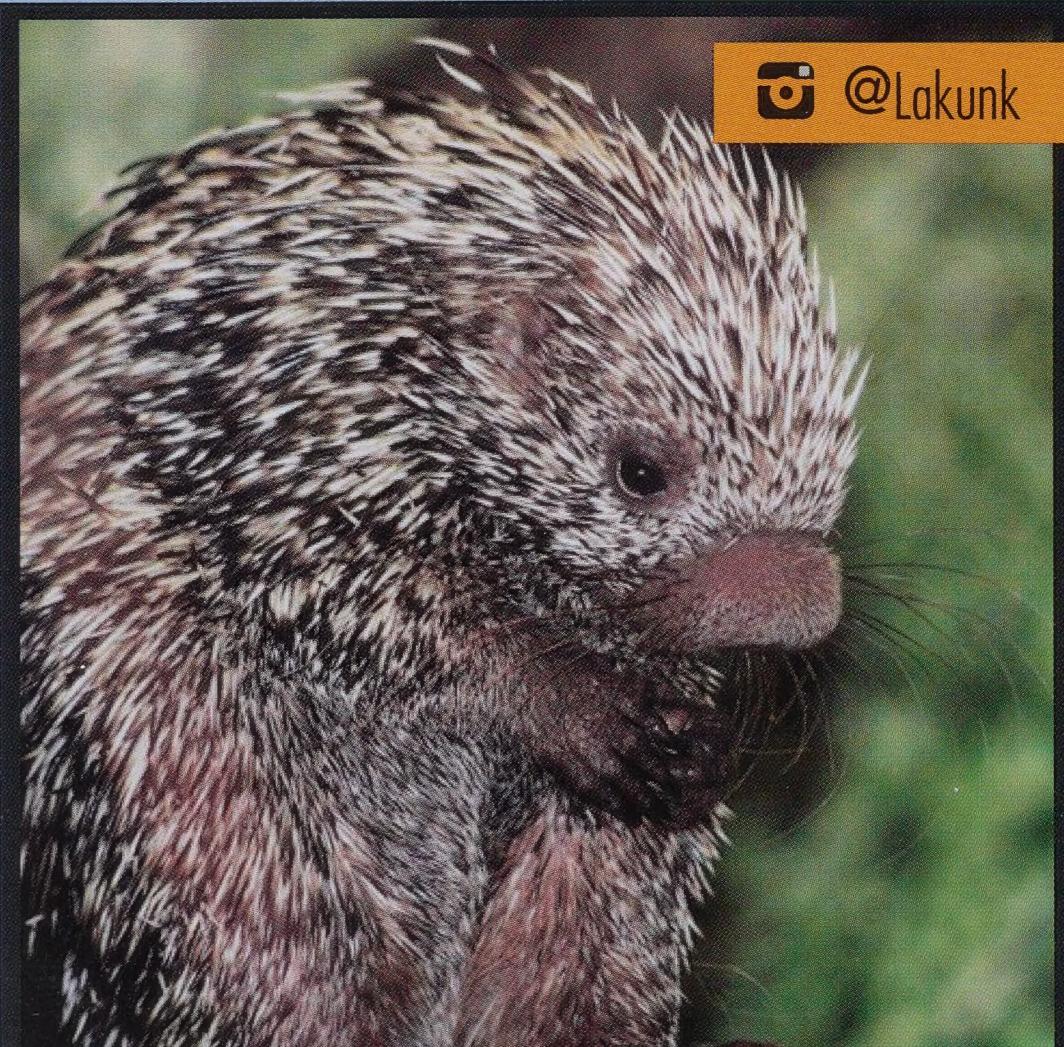
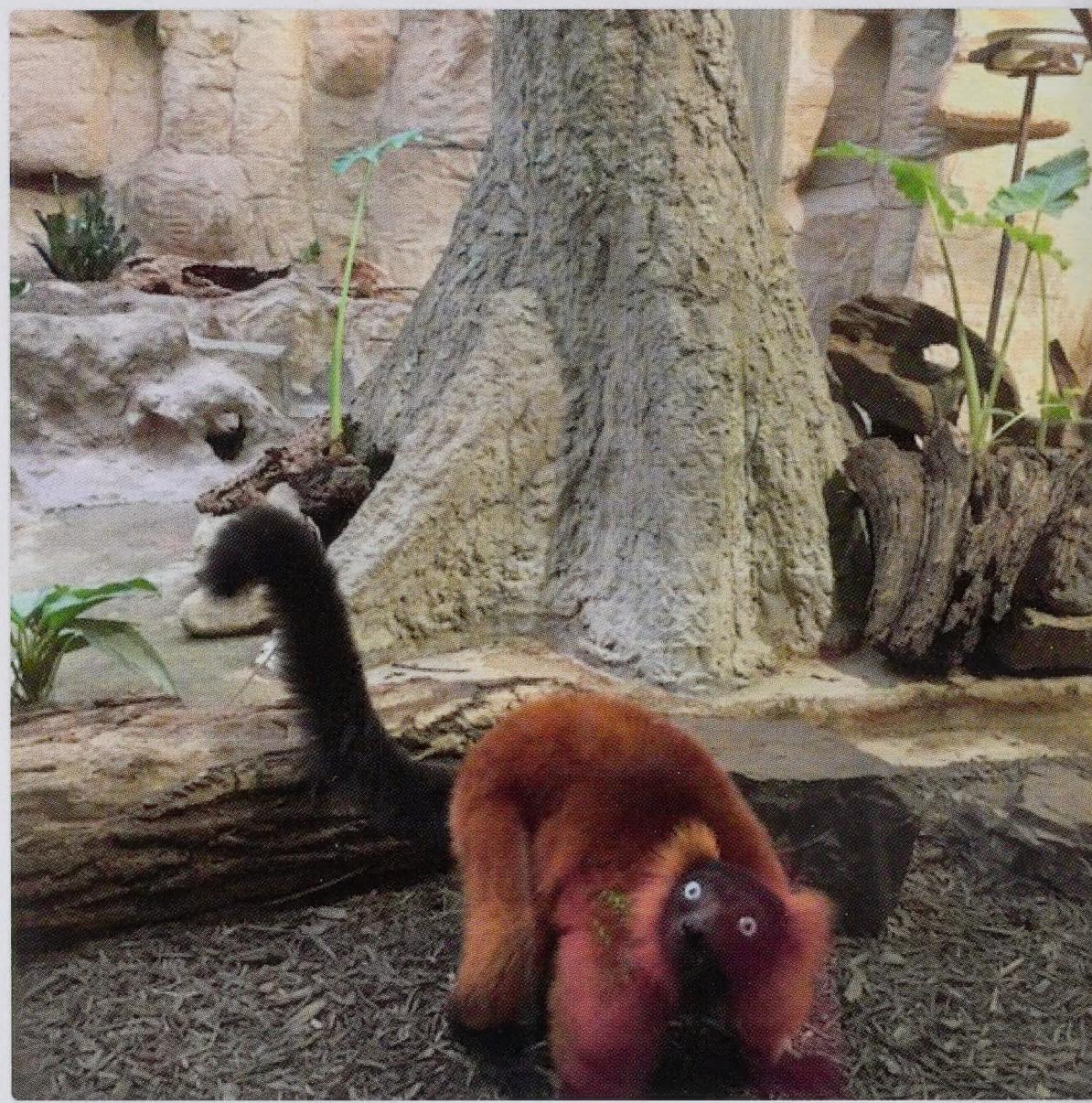
Bei Bei inspecting his reflection #pandastory
@FONZNationalZoo @houseofcubs
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LSGlisson

Aurora
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@Lakunk

Tiny, little prehensile-tailed porcupette Charlotte enjoys her vegetables.
#porcupine #WeAreFONZ #zoo #babyanimal

@Aimstarr

The cover features a large photo of a jaguar's face. The title "ZOOGOER" is in large, bold, yellow letters. Below it, smaller text reads "Volume 16, Number 4, July-August 1987" and "SPECIAL ISSUE: CATS". A "CONTENTS" section is listed:

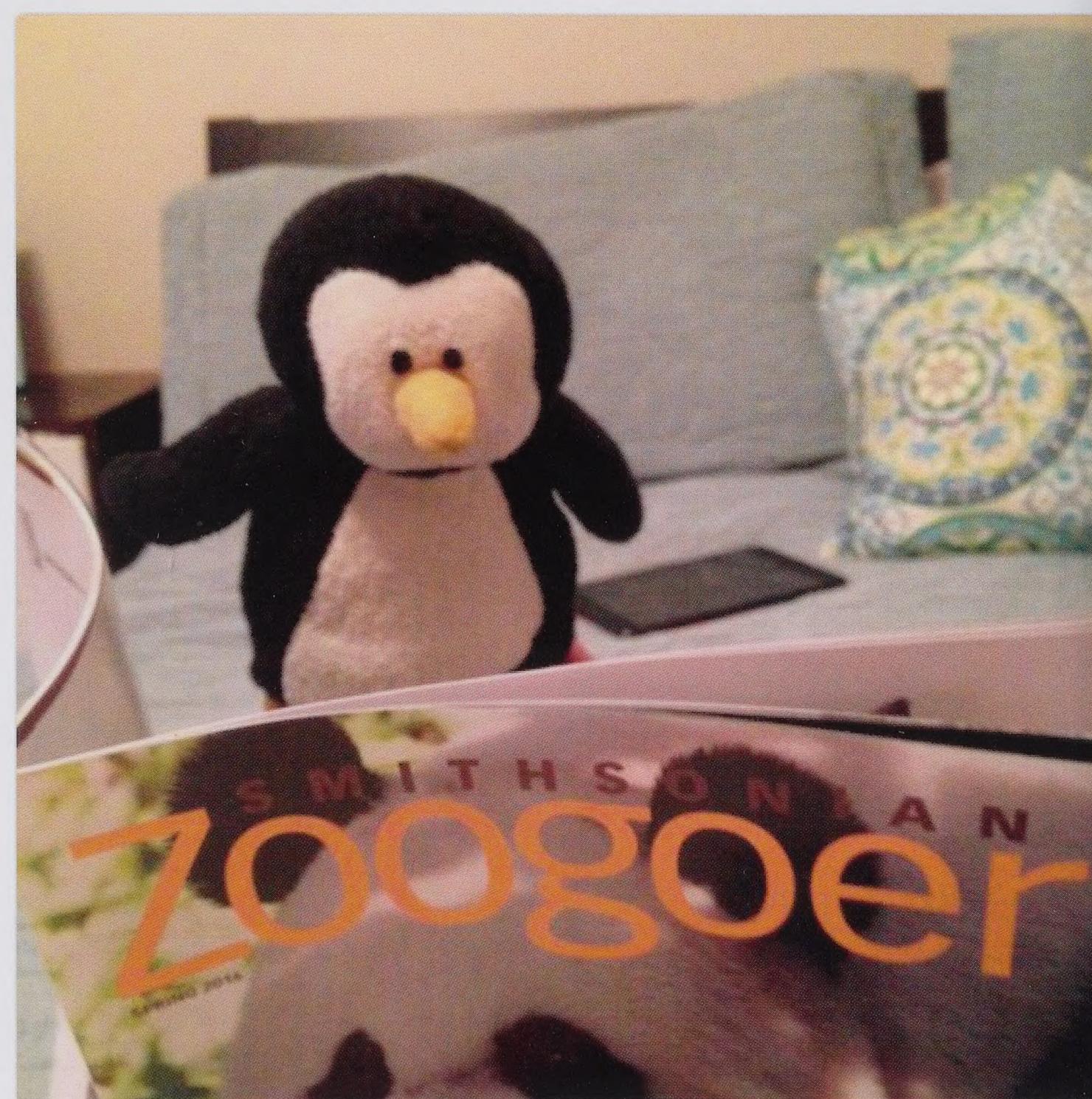
- The Decline and Fall of the Feline Empire 4
by Dr. Susan Lumpkin
- A look at the family felidae in the wild and at the National Zoo.
- On the Trail of the Leopard 14
by Dr. John Seidensticker
- The very qualities that have made

Vintage #Zoogoer magazine from my parents' house. #WeAreFONZ



ChillyWilly
@DrChillyWilly

Reading the latest edition of Zoogoer!
@FONZNationalZoo @NationalZoo. Looking
good @MommyMei98 @houseofcubs !



12

SUMMER 2016 | Vol 45, No 2
FEATURES

STAN BYSSHE/FONZ VOLUNTEER

Father Knows Best

Fatherhood is for the birds—and the crocodiles, and the frogs, and the monkeys, and the lions.

Journey into the surprising world of animal parenting this Father's Day.

BY PHYLLIS MCINTOSH

20 Look!

PORTFOLIO

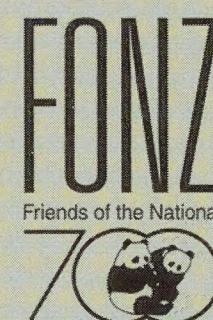
No matter how often you visit the Zoo, there's always something new to see. Focus on wildlife wonders through the lenses of gifted photographers who know the park intimately.

28 One Piece at a Time

BY LISA DUCHENE

All summer, colorful creatures made of plastic debris will enliven the Zoo, catching the eye and testifying to the perils of marine pollution. Drop by and see what's "Washed Ashore."

SMITHSONIAN Zoogoer



is the dedicated partner of the Smithsonian's National Zoological Park. FONZ provides exciting and enriching experiences to connect people with wildlife. Together with the Zoo, FONZ is building a society committed to restoring an endangered natural world. Formed in 1958, FONZ was one of the first conservation organizations in the nation's capital.

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Smithsonian National Zoological Park is located at 3001 Connecticut Ave., N.W., Washington, D.C., 20008-2537. Weather permitting, the Zoo is open every day except December 25. For hours and other information on visiting the Zoo, go to nationalzoo.si.edu.

Membership in FONZ supports the animal care, conservation, and educational work of the Smithsonian's National Zoo. It also offers many benefits: a *Smithsonian Zoogoer* subscription, discounts on shopping and events, discounted or free parking, and invitations to special programs and activities. To join, call 202.633.2922, or visit fonz.org/join.

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Smithsonian Zoogoer

Publisher: Lynn Mento

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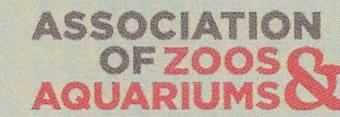
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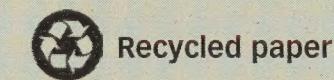
On the cover:

Luke, the Zoo's male lion, nuzzles one of his cubs. Male lions are the only feline fathers to take part in rearing their young.

PHOTO BY LINDA GLISSON/FONZ PHOTO CLUB



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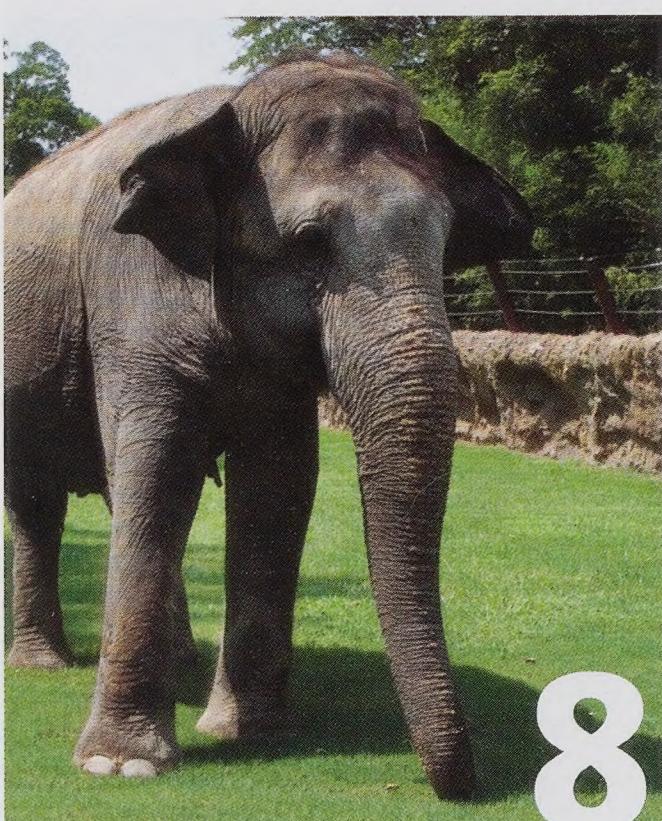


SUMMER 2016

DEPARTMENTS

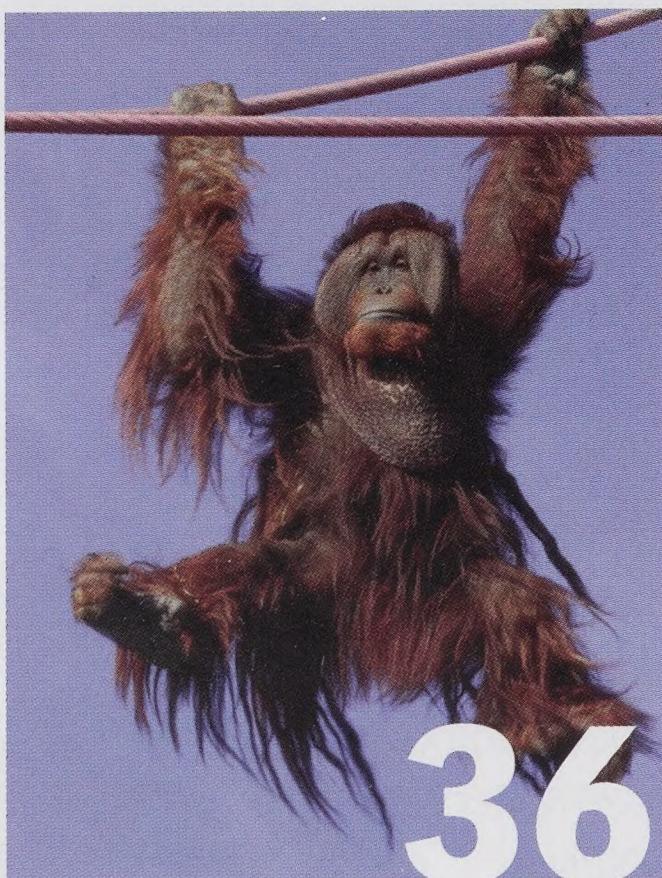
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CONNOR MALLON/NZP



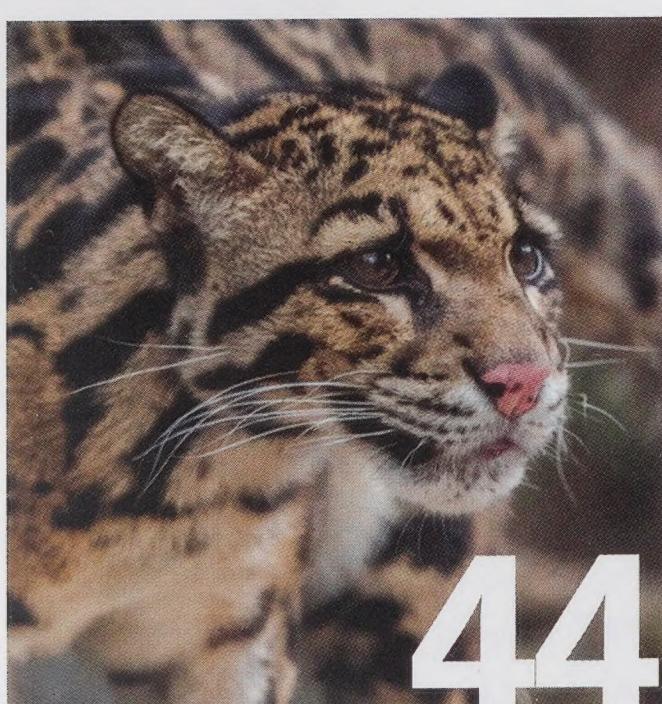
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MEGHAN MURPHY/NZP



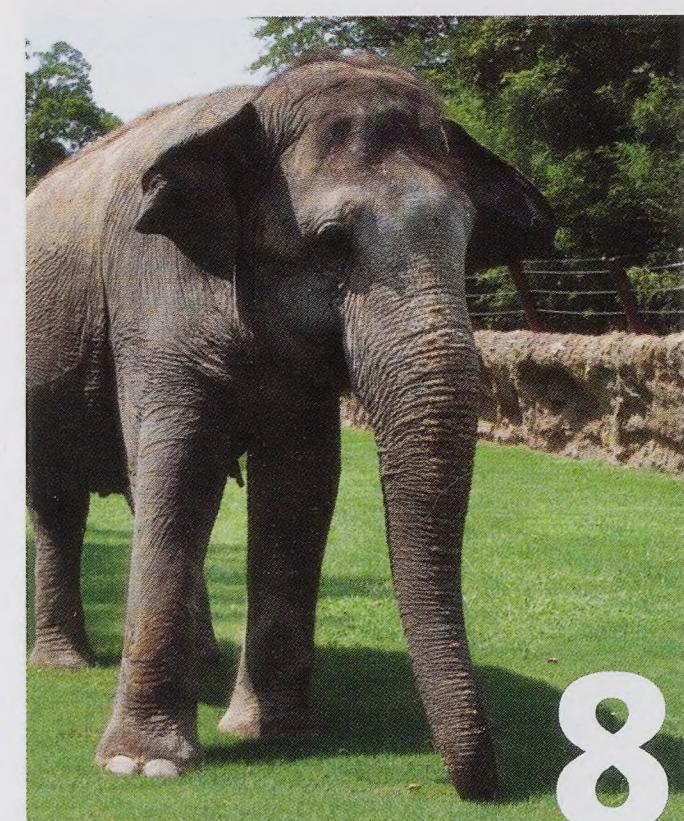
36

JESSIE COHEN/NZP



44

BARBARA STATAS/FONZ PHOTO CLUB



3 From FONZ

After almost a year at the helm, executive director Lynn Mento marvels at the Zoo's magic, from passionate animal care to gleeful visitors to groundbreaking conservation biology.

4 From the Zoo

Red pandas, one of our most beloved species, are back on Asia Trail in a newly renovated exhibit made possible by your generosity.

5 Zoo + You

FONZ members seldom need a reason to return to the Zoo. But just in case, here are seven.

6 Zoo News

Baby foxes and an infant monkey, elephant x-rays and cheetah blood draws, Zoo fieldwork around the globe, and more.

11 Smithsonian Campaign

A million-dollar gift underwrites cutting-edge research at the Smithsonian Conservation Biology Institute in Virginia.

35 Kids Corner

Hang out with orangutans, grab a snack with a hermit crab, cuddle up with adorable (honestly!) rats, and meet a keeper who tends the Zoo's monkeys and apes.

39 FONZ

Children's classes, ZooFari restaurants and wineries, and our 2016 Appeal.

44 Zoo View

Capturing a shot of a clouded leopard is tough. But FONZ Photo Club veteran Barbara Statas pulled it off—and how!

MAGIC IN THE MAKING

IT'S HARD FOR ME TO BELIEVE I'M COMING UP ON MY FIRST FULL YEAR HERE AT FONZ! I have loved every minute, even with the unusual challenges that come with working in this unpredictable—but magical—environment. (I've typed "feces" and "insemination" in more emails in my first year here than I have in my entire career. Which I suppose was an easy task coming off a base of, I'm quite sure, zero times before.)

Among other things, I've been floored by the cutting-edge care and passion that Zoo staff and volunteers bring 24/7 for the animals in our collection. And I've been amazed by the globally leading species-conservation science being done right here and at SCBI. On my way to get lunch, I routinely pass people who have been selected by the Association of Zoos and Aquariums to be in charge of the preservation of endangered species from African penguins to kori bustards. Or I'll spot a keeper or volunteer who's getting a coffee after staying up all night to care for a sick or infant animal. It's a magical place, and I know you appreciate that just as much as I do.

Part of the incredible magic of being here at the Zoo is seeing these magnificent animals. So many of you clearly feel the same, and you've provided us with amazing photos. Check out some of them in "Look!" on page 20.

Another magical component for me is being able to step outside my office in the Visitor Center and watch the kids running down Olmsted Walk to their favorite animal—often with their dads in hand or trailing behind. Although the dads I see at the Zoo lead the pack in the animal kingdom in terms of taking care of their children, there are some surprisingly involved animal dads we thought you'd enjoy reading about in "Father Knows Best" on page 12.

And, of course, the most magical part of the job is being able to partner with you to save species through the groundbreaking work here at the Zoo, at SCBI, and by Smithsonian scientists around the globe. To that end, to help save species from the trash found in our oceans, FONZ has brought a special exhibit to the Zoo called "Washed Ashore: Art to Save the Sea." It features 17 large sculptures of marine life made exclusively from trash that has washed onto our beaches. It's really worth seeing—both powerful and beautiful—and it will be here through September 5th. You can read more about it on page 28.

So come see us this month! See if your kids can find all 17 "Washed Ashore" sculptures, and check out our new animals (red pandas and adorable baby fennec foxes, for example). And if you need to refuel, we have some new food offerings, including a few local and organic options. I hope to see you out in the park!

Best,

Lynn Mento
Executive Director, Friends of the National Zoo



COURTNEY SMITH/FONZ

A GREEN LIGHT FOR RED PANDAS



A RECURRING THEME IN SCIENCE—AND PHILOSOPHY—is THE INTERCONNECTEDNESS OF ALL THINGS. At the Zoo, we see this every day. Your support helps us maintain top-notch facilities for our animals and conduct pioneering research into the preservation of species. That happens at the Zoo, at the Smithsonian Conservation Biology Institute in Virginia, and throughout the world. Literally, the dollars that you contribute in Virginia, Maryland, and D.C. help save species from around the globe.

Red pandas are a great example. The Zoo's newly renovated exhibit recently reopened on Asia Trail, and two red pandas have moved in. Tusa (a two-year-old male) and Asa (a two-year-old female) now have the benefit of an indoor space, air-conditioning, heated logs, and other amenities. FONZ members contributed a third of the project costs, and we thank you for your generosity! In addition to Asa and Tusa on Asia Trail, the Zoo has a population of eight healthy and feisty red pandas out at SCBI, and we recently transferred six genetically valuable cubs to other zoos for breeding.

Solitary creatures that live high on Himalayan slopes, red pandas are tough to study in the wild. What we do know is disturbing: Scientists estimate that their population has fallen about 50 percent in the last two decades. Climate change and spreading human populations have eroded the habitat of red pandas, now classified as endangered.

Red pandas' remoteness and decline in the wild adds urgency to efforts to conserve them in human care. I'm proud to say that your Zoo has been a leader in this vital work. More than a hundred cubs have been born at the Zoo and SCBI since 1962, and we play a key role in developing protocols for breeding and hand-raising them. Both at home and abroad, SCBI scientists study reproductive cycles in males, seeking to help zoos worldwide increase their breeding success. And we've collaborated with scientists at China's Chengdu Research Base of Giant Panda Breeding on the largest health and reproductive study of the red panda.

I hope you'll soon visit Asa and Tusa in their newly renovated exhibit. They're not just adorable, engaging animals, but also the public faces of a comprehensive effort that connects your visit to the survival of this species around the world. You can learn more about red pandas—including how you can help them—at fonz.org/redpandas. Meantime, I'll leave you with a favorite fact: Asa means "hope" in Nepali. Based on the work that we're doing to save the red panda, my colleagues and I think that name is just perfect.

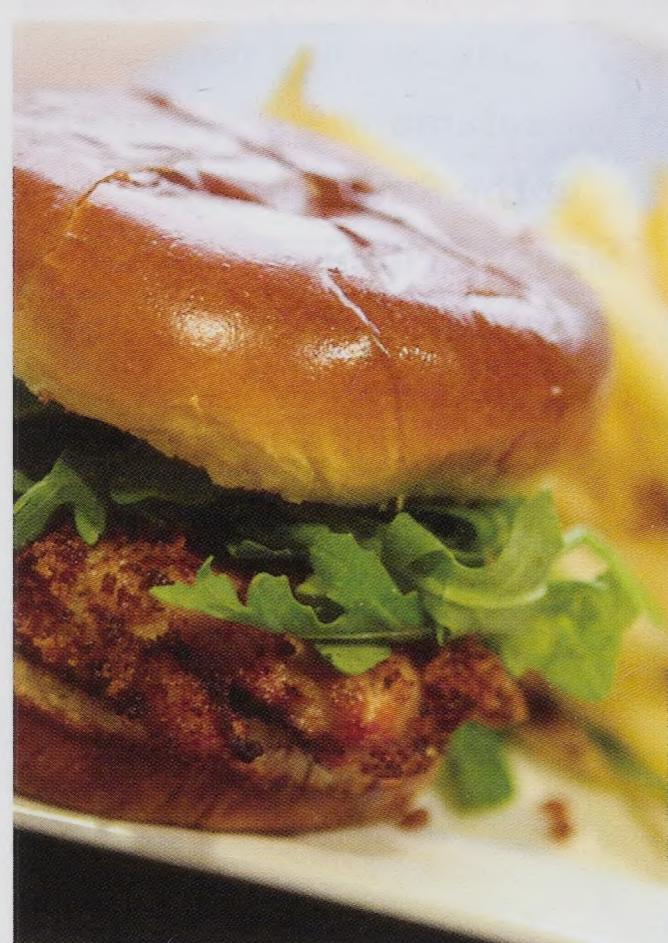
Sincerely,

A handwritten signature in black ink that reads "Dennis Kelly".

Dennis Kelly
Director, Smithsonian's National Zoological Park

Stop By This Summer!

FONZ
members
seldom need
a reason to
return to
the Zoo.
But just in
case, here
are seven.



COURTNEY SMITH/FONZ



WASHED ASHORE PROJECT

COOL CONSERVATION ART: Encounter 17 stunning animal sculptures—the free “Washed Ashore: Art to Save the Sea” exhibit, at the Zoo through Sept. 5—all created from marine trash. Learn more on pp. 28-33.



JUDY YOUNG/FONZ PHOTO CLUB

GRAPES WITH THE APES (Sept. 1): Support conservation by sampling the artistry of local vintners and top-notch restaurants. Learn more at fonz.org/grapes.

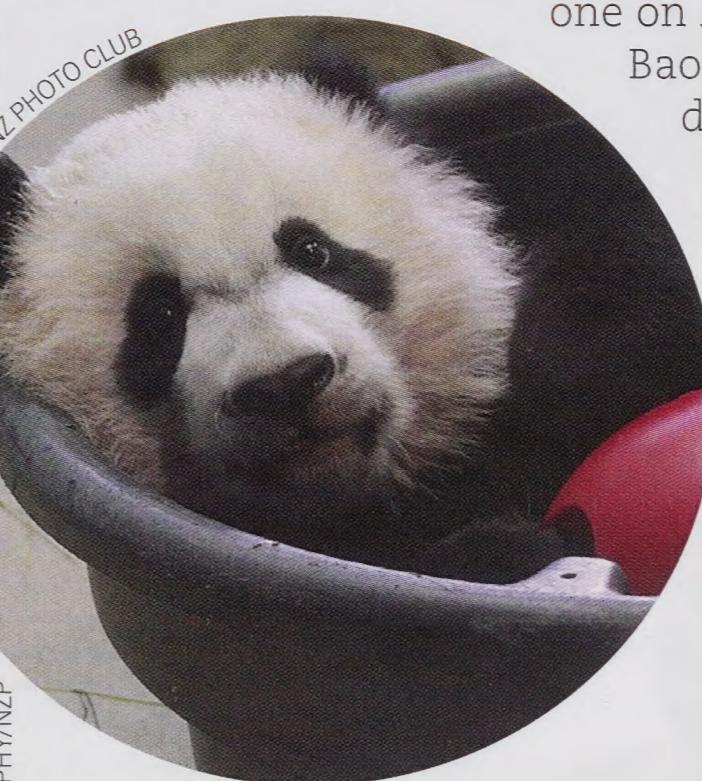
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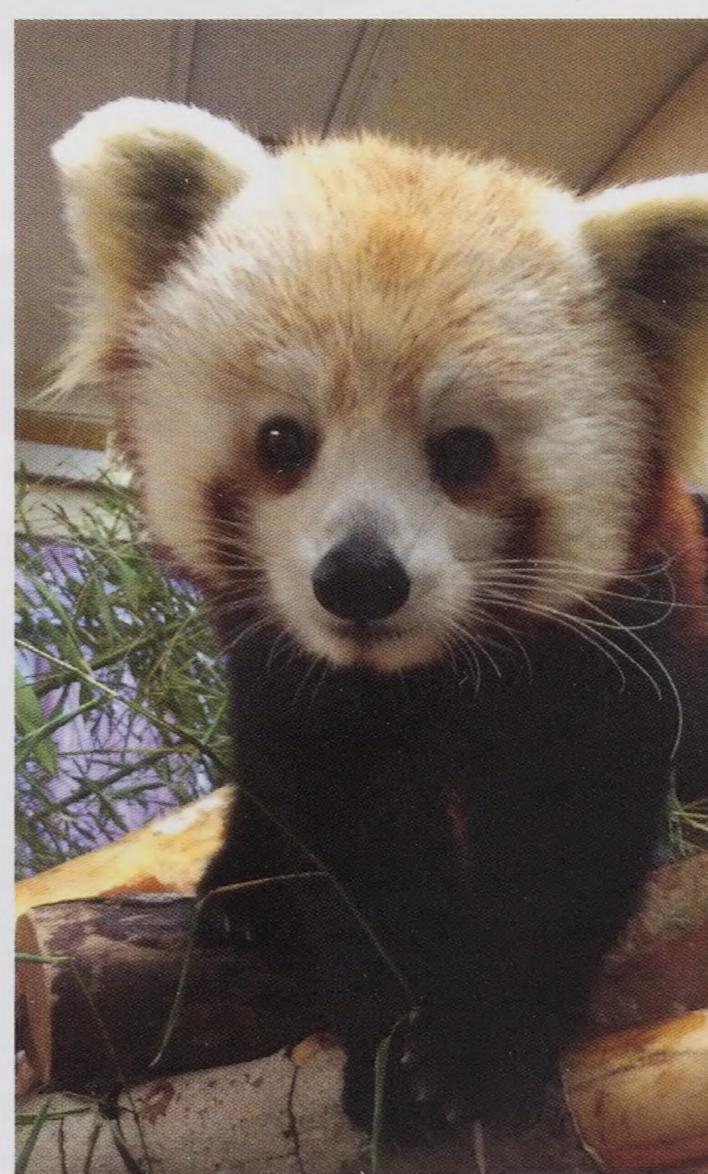
JIM JENKINS/FONZ PHOTO CLUB

BREW AT THE ZOO (July 21): Enjoy beer from more than 70 craft brewers, check out the hottest food trucks, and hear music from the local band The Reagan Years. All proceeds go toward animal care and conservation. Learn more at fonz.org/brew.

PANDA PARTY (Aug. 20): Bei Bei turns one on Aug. 22, and Bao Bao turns three a day later. FONZ members get an exclusive chance to celebrate the previous Saturday. Learn more on p. 34.

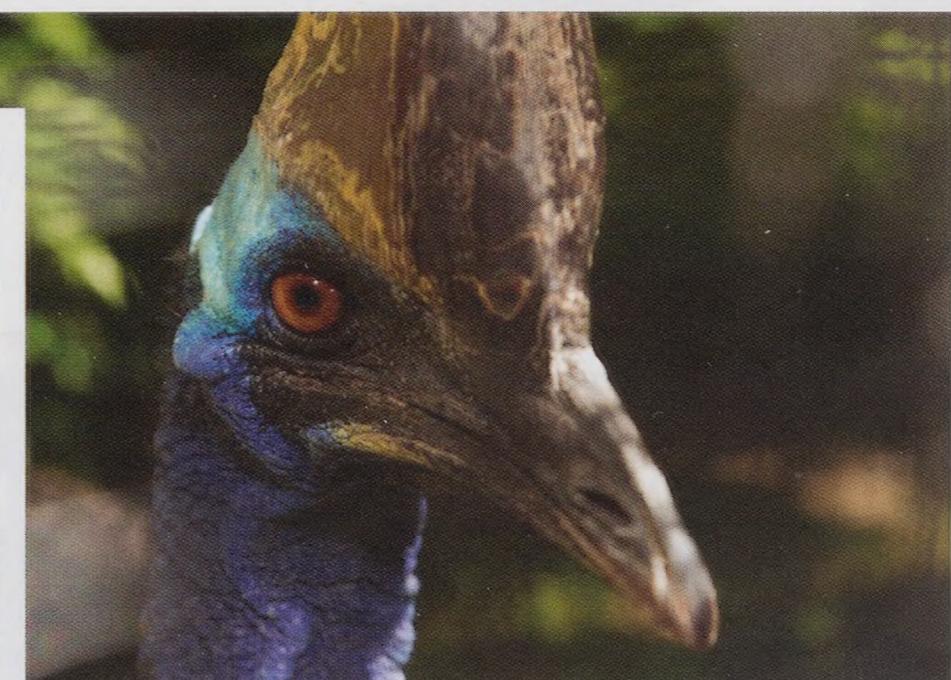


FABULOUS NEW FOOD: *Mane Grill*: rosemary-lemon fried chicken sandwich, featuring a marinated chicken breast coated in panko crumbs, deep-fried, and served on a brioche bun. *Mane and Panda Grills*: waffle cone filled with organic chicken, deep-fried and drizzled with maple-honey-mustard sauce. *Hot Dog Diner*: Washington Roll, a locally sourced, spicy Italian sausage served on a pretzel roll and topped with Maryland crab dip.



SMITHSONIAN'S NATIONAL ZOO

RETURN OF THE RED PANDAS: Tusa and Asa, the Zoo's new pair of red pandas, moved into their freshly renovated exhibit on Asia Trail this spring. Paid for in part through the generous support of FONZ members like you, the overhaul included adding an indoor retreat with heating, air-conditioning, perches, and a window so visitors can see the pair when they're inside.



CONNOR MALLON/NZP

FEATHERED FAREWELL: Earline, the Zoo's double-wattled cassowary, will move later this year to the San Antonio Zoo to be paired with a male for breeding as recommended by the Species Survival Plan. Drop by the Bird House this summer to wish her a happy and productive motherhood.



Aid for Amphibians

One of the greatest challenges conservationists face is allocating scarce resources effectively. That's a huge problem in Panama, where the deadly chytrid fungus is wiping out whole species of frogs. In response, Smithsonian scientists joined with the Panama Amphibian Rescue and Conservation Project to identify priorities for intervention.

Their research, published in *Animal Conservation*, looked at the country's 214 known frog species to find those that scientists could help by collecting and breeding a population large enough for genetic diversity and which would die out otherwise.

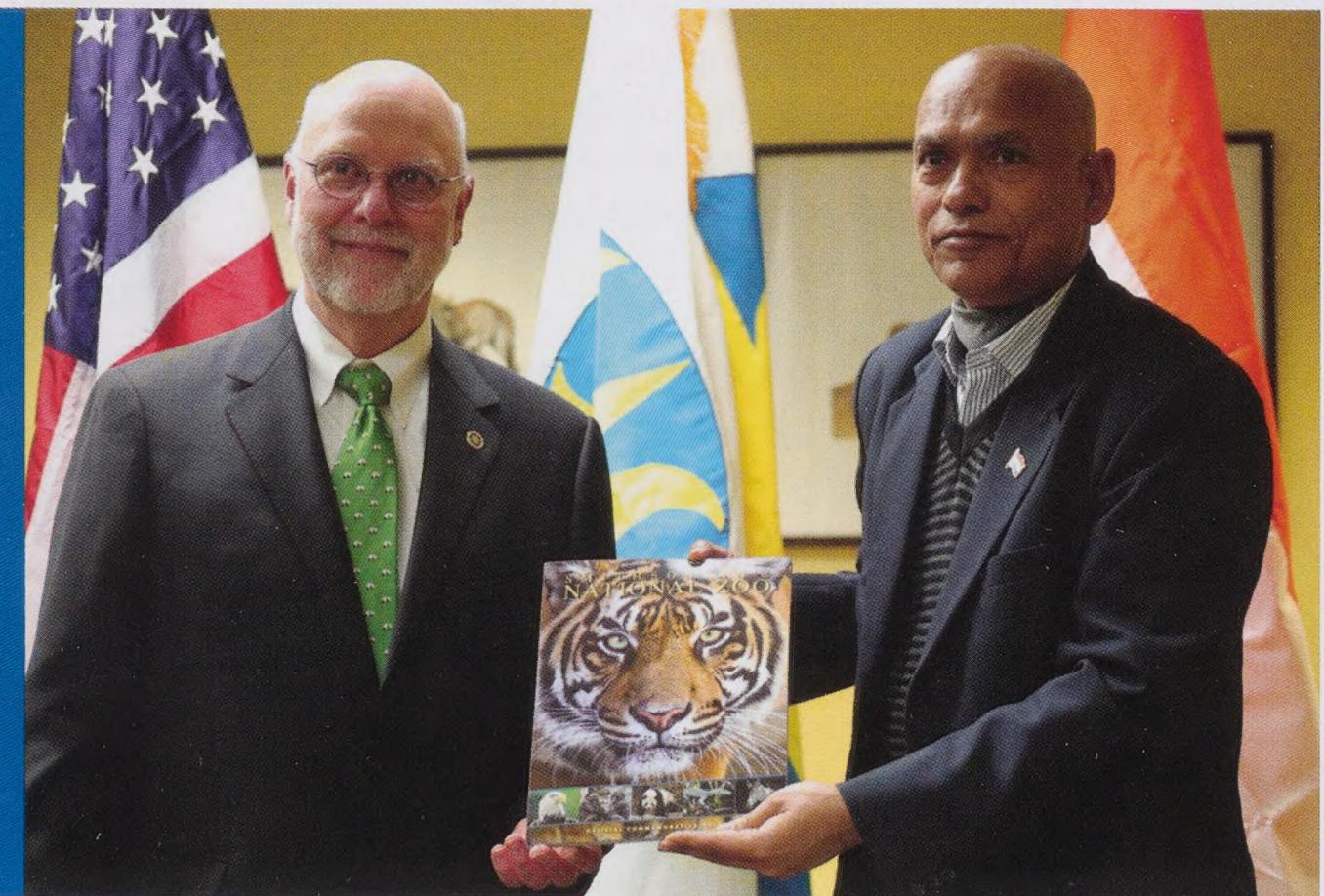
Among those added to the list were rusty robber frogs (seen here).

Meantime, conservationists in the U.S. worry about whether a newly discovered species of the chytrid fungus has reached domestic salamanders. A student at the Smithsonian-Mason School of Conservation has been testing swabs contributed by salamander owners around the country. He's done 300 so far, and they've all been negative. Still, scientists will remain vigilant.



New Conservation Partnership

Scientists, veterinarians, and keepers from the Smithsonian's National Zoo and Conservation Biology Institute will soon journey to India to train zoo professionals there as part of a new partnership with the Indian government. Zoo director Dennis Kelly (at left in photo) and D.H. Singh, member secretary of the Central Zoo Authority of India, signed the agreement in March. Course topics include preventive medicine, wildlife-health monitoring, nutrition, and more. Instructors and program participants will collaborate in crafting conservation strategies that foster sustainable development while protecting highly endangered animals.

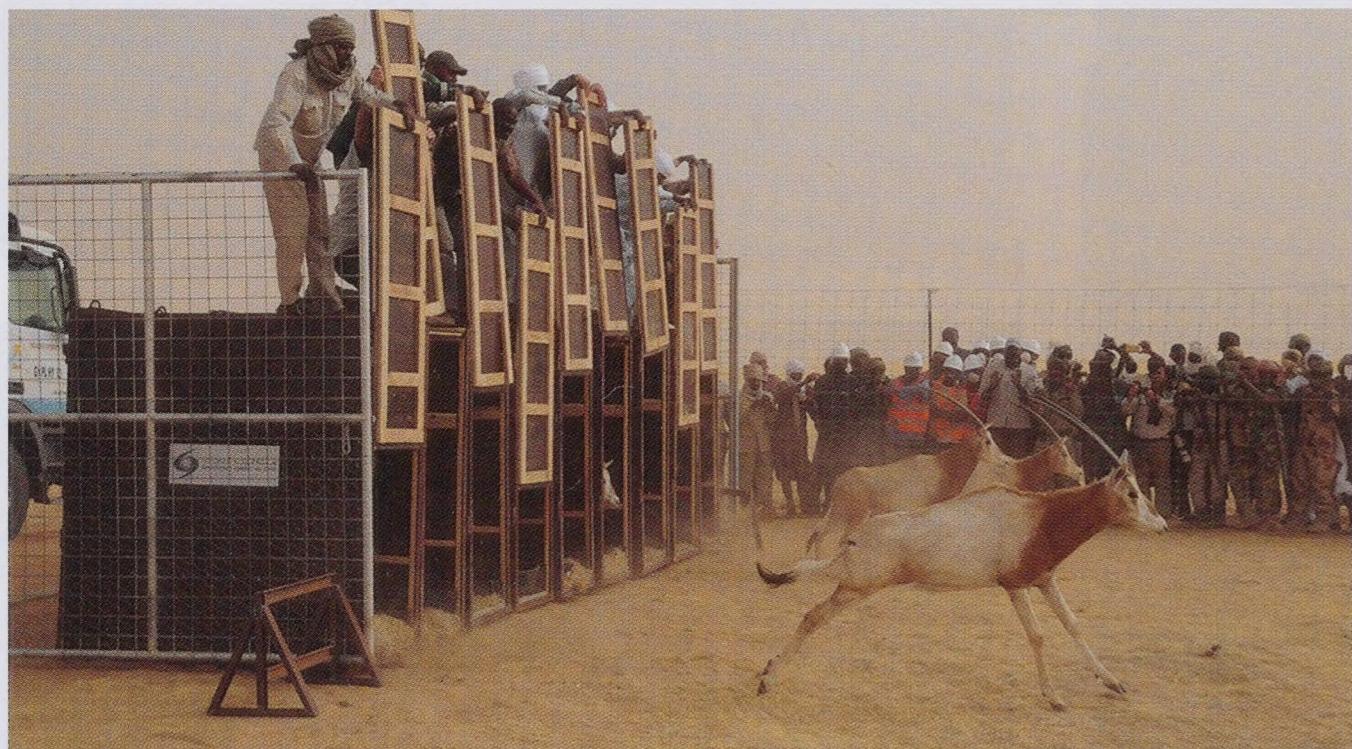


Fennec Family

Daisy, a fennec fox at the Small Mammal House, had two kits in early February: a male and a female. At birth, each weighed just 40 grams—less than a typical set of car keys. Daisy has never successfully raised kits on her own, so keepers moved the newborns into an incubator and bottle-fed them formula every two hours for ten days. In three weeks, the kits doubled in weight and began eating solid food—beef, vegetables, fruit, and kibble. Fennec foxes are the smallest foxes in the world, just two to three pounds fully grown. Their oversized ears, about as long as their legs, are critical for dissipating heat in their desert habitat.



CLYDE NISHIMURA/FONZ PHOTO CLUB



ENVIRONMENTAL AGENCY-ABU DHABI (EAD)

Species Success!

After a decades-long absence, the scimitar-horned oryx is back in its African habitat. This spring, 25 of these desert antelope were reintroduced to Chad, as part of an international conservation effort including researchers from the Zoo's Smithsonian Conservation Biology Institute. Habitat loss and hunting had driven the species extinct in the wild. This is the first reintroduction attempt.

The oryx will spend a few months getting acclimated at a game reserve before being released to the grasslands of northern Africa this summer. SCBI researchers will fit each animal with a GPS-enabled collar, allowing scientists to monitor the herd and collect conservation data. Over the next five years, researchers hope to establish a sustainable herd of 500 wild oryx, a critical step toward preserving the grassland ecosystem. In the meantime, you can see a scimitar-horned oryx at the Cheetah Conservation Station.

Fighting Disease: A New Battleground

Three-fourths of the illnesses that affect humans originate in animals, including HIV/AIDS, Ebola, influenza, and SARS. In response, the Smithsonian Global Health Program (SGHP) fights threats by focusing on interactions between people and wildlife. Directed by Suzan Murray (at left in photo), the former head vet at the Zoo, SGHP works with international partners to identify emerging diseases and attack them before they can do serious harm.

For example, SGHP is working with the U.S. Agency for International Development in Myanmar to study how infectious diseases jump from bats, rodents, and primates to people through hunting and the wildlife trade. Another project studies heart disease among great apes. SGHP is also collaborating with Mathew Mutinda (at right), a veterinarian for the Kenya Wildlife Service, who is studying a deadly skin disease in the critically endangered black rhino.



COURTESY OF SUZAN MURRAY



A Supersize Patient

Elephants, like people, can suffer from arthritis. Shanthi, a female Asian elephant, developed it in her front left leg more than a decade ago. (Having passed 40, she's an elephant of a certain age.)

Unfortunately, there's no cure, so the animal-care staff focus on monitoring her symptoms and maintaining her comfort. Shanthi gets anti-inflammatories and hydrotherapy.

Lately, keepers have noticed that Shanthi's been putting more weight on her other feet, leading to wear and tear. To protect her feet, keepers applied an acrylic cover to stabilize split nails, and they even give her regular pedicures!

Her front feet recently developed an infection. That raised the worrying question of whether it had spread to her bones. To find out, veterinarians and keepers x-rayed her feet. Years of patient training paid off when Shanthi held each foot out through a special opening in her enclosure and placed it on an x-ray plate. Comparing the image to previous x-rays, the team determined that the infection was localized and had not spread.

The Elephant Trails exhibit, where you can see Shanthi and five other females, includes different substrates—primarily grass, dirt, and sand. They provide good cushioning and help Shanthi stay comfortable.



MEGAN MURPHY/NZP

SMITHSONIAN'S NATIONAL ZOO

COAXING BLOOD FROM A CHEETAH

After months of patient training by animal-care staff and countless meatball rewards, the Zoo's cheetahs have learned to lie still for blood draws from veins near the base of their tails. To get the spotted cats used to the sensation, staff first poked them with fingertips, then paperclips, and finally needles—all while plying the predators with treats. Get the whole story at fonz.org/cheetahblood.



JANICE SVEDA/FONZ PHOTO CLUB

A New Monkey Mom

Layla, one of five Allen's swamp monkeys on exhibit at Think Tank, gave birth in early March. The father is Nub Armstrong, a 15-year-old male.

Layla cradled the healthy baby closely, so animal-care staff allowed her to care for and bond with the newborn without any interference. They later determined that the baby is female.

FONZ members had an exclusive opportunity to vote on the baby's name. They selected Zawadi, which means "gift" in Swahili, spoken in the monkeys' central African habitat.

Have Wings, Will Travel

Everyone knows that many birds fly south in the winter, then return north to breed. But scientists are still plumbing the mysteries of migration. Toward that end, researchers and volunteers from the Smithsonian Migratory Bird Center conducted fieldwork this past spring in Jamaica and on the Gulf Coast of Texas.

Gently capturing, assessing, and banding hundreds of avian migrants, the teams gathered vital data about the routes birds follow, how long their treks take, and more. Minute radio "backpacks" on some fliers will transmit the bird's location. Soar into avian science at fonz.org/birdblogs.



DANIELLE AUBE



DANIELLE AUBE

Maned Wolf Pups

A pair of maned wolves born in January brought the Smithsonian Conservation Biology Institute's population to 11. Native to South America, the species is endangered due to habitat loss.



This is the first litter for Zayda (the mom) and Echo (the dad). The news is particularly exciting because Echo is one of the most genetically valuable maned wolves in human care. Maned wolves live in mated pairs, and both parents care for the pups.

The Zoo is working to have maned wolves back on exhibit this summer.



"GOOD TO SEE YOU!"

Few animals at the Zoo greet visitors more enthusiastically than Alice, a two-year-old Stanley crane at the Bird House. Hatched from an egg that her parents abandoned, Alice was hand-reared by keepers. She "imprinted" on them, forming a social bond like that between chicks and parents. When she sees her keepers, Alice flaps her wings excitedly and follows them around.

Between greeting visitors and responding to keepers, Alice has a lot of human interactions. How do they affect her? To find out, researchers from the Zoo and the Smithsonian Conservation Biology Institute studied her hormone levels, particularly a stress hormone known as cortisol.

The objective was to determine if visitor interactions were stressful for Alice, as well as whether she was stressed by not interacting with humans on certain days. The researchers collected fecal samples twice a day in June and July 2015.

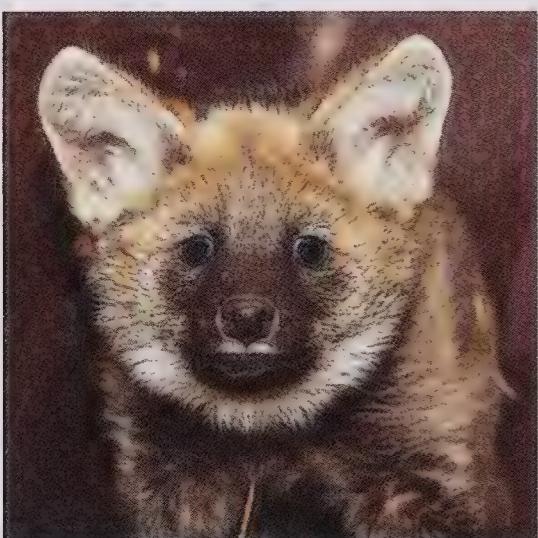
They found that her stress levels were not high on days with or without human contact. That means Alice can keep greeting visitors, which both she and they enjoy.

Researchers will continue to monitor Alice's hormones as she grows and becomes sexually mature. They are also expanding the study to include Alice's family. Ultimately, they hope to create a baseline for the species overall and use that information to improve breeding efforts. You can learn more at fonz.org/alice.

CONNOR MALLON/NZP



Smithsonian Campaign



JANICE SVEDA/FONZ PHOTO CLUB

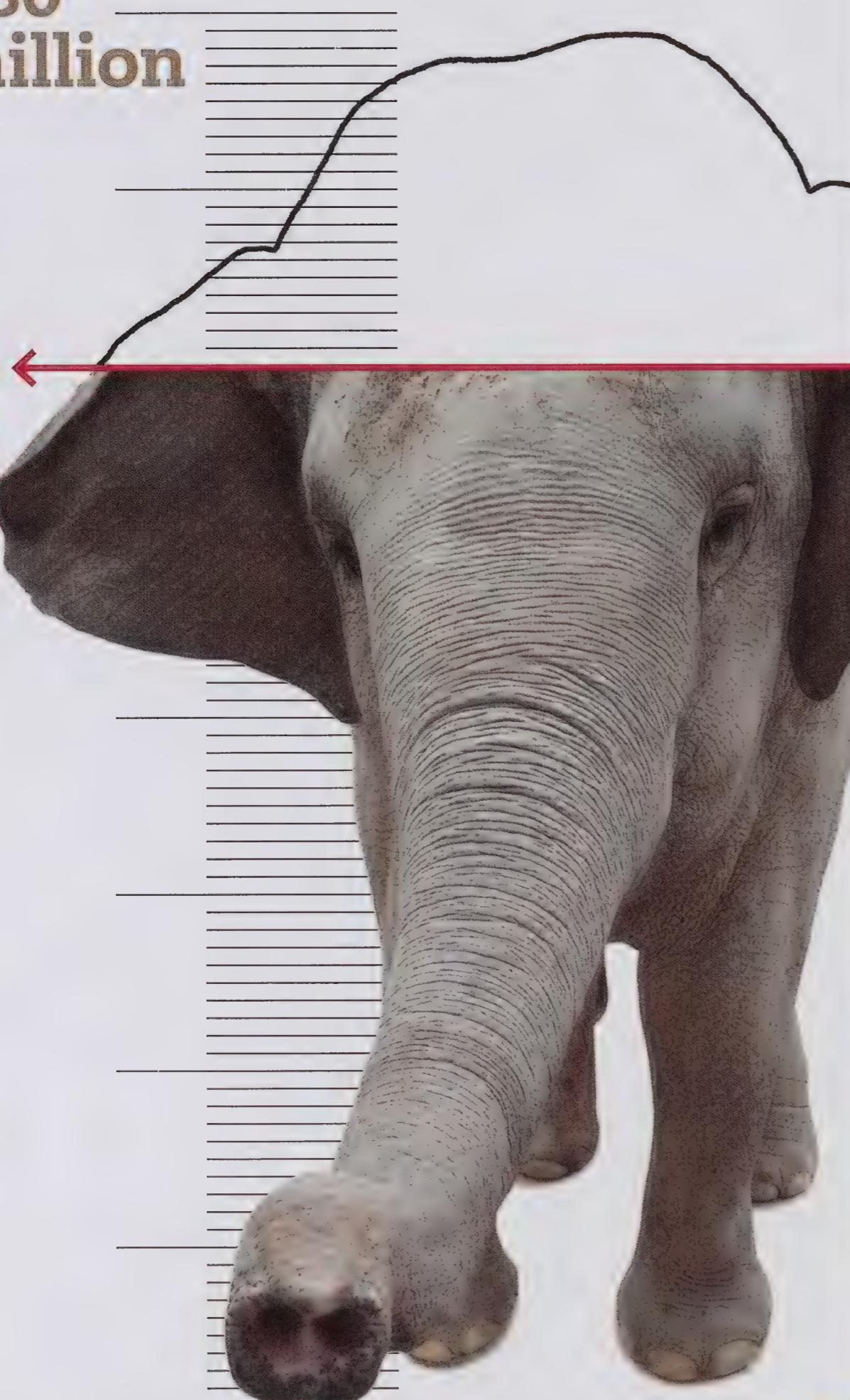


VICTORIA LAKE/NP



SCBI

**\$80
million**



**\$60.3
million**

Represents
donations
received as of
February 29, 2016

Sprinting Against Extinction

HAL BRIERLEY AND HIS WIFE, DIANE, have generously donated \$1 million to jump-start a major, unprecedented project at the Smithsonian Conservation Biology Institute in Front Royal, Virginia. The Slate Hill Conservation Initiative, a 240-acre site, will provide vital opportunities to increase the number of species we work with.

It will also enable us to expand our existing research programs, which now cover black-footed ferrets (rescued from the edge of extinction), red pandas, clouded leopards, cheetahs, and more.

SCBI has more than 40 years of experience studying wildlife and the threats to it, as well as amassing and imparting the scientific expertise needed for effective conservation efforts.

We can save species with science, but we need your help. You can have an impact on this incredible undertaking. To learn more or support this project, contact Cole Johnson at **540-635-6557** or johnsonc@si.edu.

“Conservation may be the least understood work of the National Zoo. We hope our gift will serve as a catalyst to inspire additional giving.”

HAL BRIERLEY

DONATE ONLINE:
fonz.org/zoocampaign

Building on Success

Beneficiaries of the Brierleys' generosity—and yours—include cheetahs, the world's fastest land animals. Notoriously difficult to breed in zoos, they are at risk of extinction. Perhaps 8,000 to 10,000 of these speedy, spotted hunters survive in the wild. So every cat counts. Breakthroughs at SCBI—artificial insemination, successful use of frozen sperm, hormonal studies, and more—have helped boost the cheetah population in human care. Thirty-four cheetah cubs have been born at SCBI since 2010.





For 15 years, Carlos was an exemplary father. He raised a dozen offspring, patiently teaching them how to find food and how to groom themselves. He made sure they stayed with him when they were out and about and carefully shielded them from danger. When Carlos died in 2014, the Smithsonian's National Zoo lost one of its most beloved animal fathers, who had delighted visitors and taught keepers a great deal about breeding behavior among his species. This doting dad was



Father



Knows Best

BY PHYLLIS MCINTOSH

Sure, moms are great, but some dads are extremely involved in raising their young, including many of the Zoo's most popular animals.

Greater rheas (adult carrying chicks on facing page, chicks above) are among the many bird species in which males help raise the young.

Father Knows Best



JESSIE COHEN/NZP

not an ape or a wolf. In fact, he was not a mammal at all. Carlos was a bird—specifically, a rhea, a large, flightless bird native to South America.

Although absentee dads are the norm in nature, attentive fathers can be found in unexpected corners of the animal kingdom, including among some reptiles, frogs, fish, and insects. In fact, you can see many examples of fine fatherhood here at the Smithsonian's National Zoo.

Ironically, most of our close relatives are deadbeat dads; only about six percent of mammals provide any sort of paternal care. Hands-down winners in the fatherhood department are Carlos's cousins. In 80 to 90 percent of bird species, males help raise the young.

While some bird babies, such as ducklings, are able to walk and forage soon after hatching, many others are naked, helpless, and constantly hungry. Infant songbirds, for example, grow so fast that they need to eat every 20 to 30 minutes. As anyone who has watched a backyard birdhouse knows, it's a fulltime job for both parents to keep those gaping little mouths filled.

Bird fathers, which often form long-term bonds with their mates, share in all aspects of child care, from nestbuilding to incubating to feeding. Male flamingos, pigeons, and emperor penguins even manufacture food for their young. Like females, they produce crop "milk," secretions from the lining of their crop (a muscular pouch near their throat, typically used to store food), which they feed to the baby.

But it is the large flightless birds—such as the Zoo's rheas, emus, and cassowaries—that take fatherhood to new heights. (All of these species are on exhibit at the Zoo's Bird House.) Males alone build nests, incubate dozens of eggs—including many fertilized by other males—and care for the chicks for up to nine months. These superdads dutifully scoop as many as 50 eggs laid by multiple females into their nests and sit on them 40 to 50 days, getting up only to stretch their legs and turn

LEFT: Is this a maternal moment or a fatherly feeding? With American flamingos, it's impossible to tell at a glance, since both parents serve food to their young.

RIGHT FROM TOP: Brown kiwi; double-wattled cassowary chick

the eggs. Except for female ostriches, which do help incubate and rear chicks, the mothers' only contribution is to lay the eggs. Emu dads are especially famous for their dedication. Somehow able to regulate their bodies, they do not eat, drink, or defecate for the entire incubation period.

While eggs at the edges of nests often don't survive, a male rhea, for example, can successfully hatch as many as 25 chicks. "What's cool about the process is that females continue to lay eggs over a couple of weeks, but during the course of incubation the eggs are able to synchronize so that all hatch within a 24-hour period," says the Zoo's Bird House curator, Sara Hallager. "The chicks inside the

Bird fathers, which often form long-term bonds with their mates, share in all aspects of child care, from nestbuilding to incubating to feeding.

eggs also start to vocalize and actually communicate with each other. Obviously, it's the best strategy for all the eggs to hatch at once, because the male couldn't both incubate eggs and guard chicks that have to start looking for food."

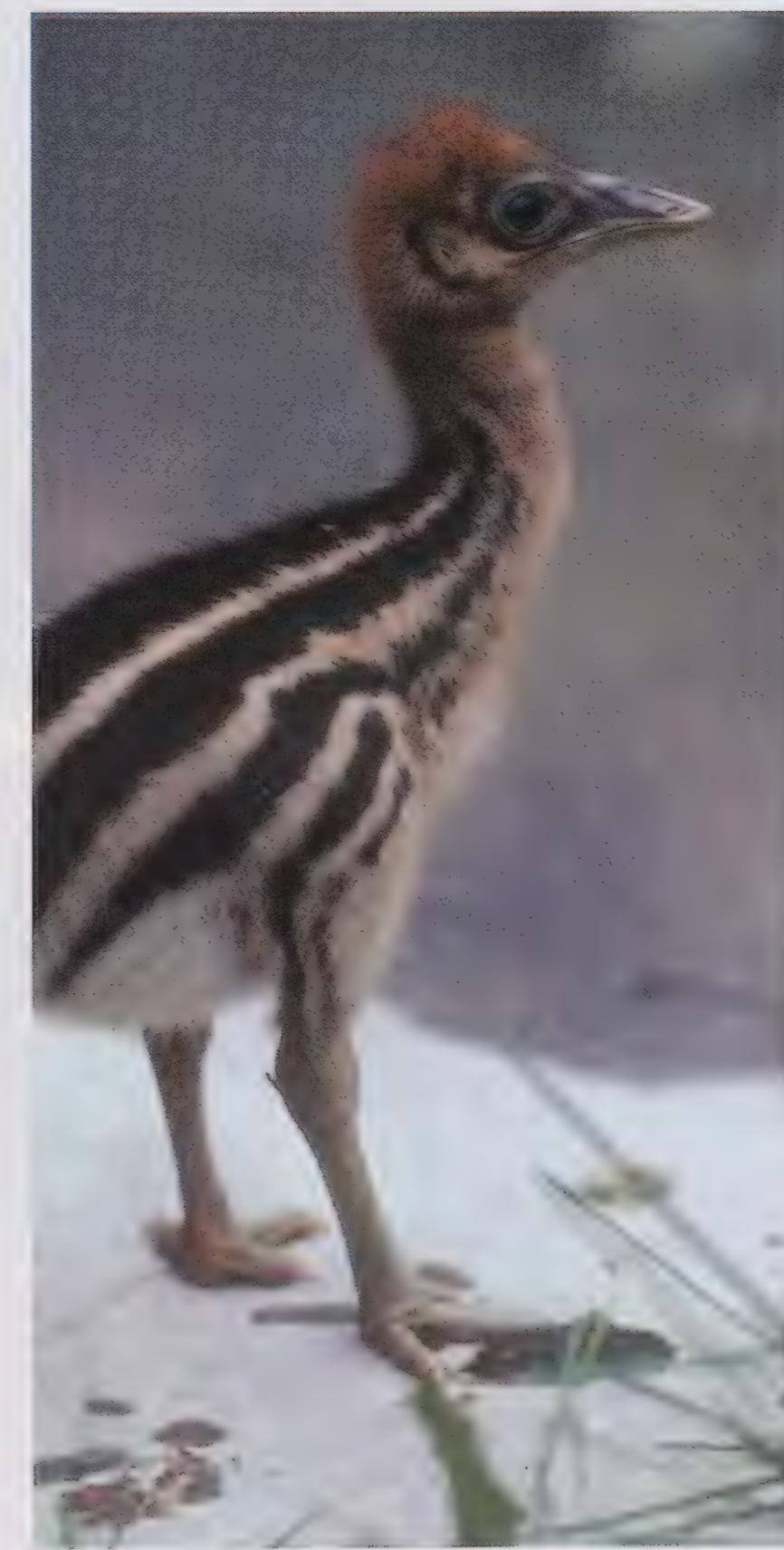
The small kiwi, also flightless, operates a bit differently. Although pairs typically mate for life, the male is solely responsible for incubating the single large egg. Chicks hatch fully feathered and largely able to fend for themselves.

Novel Approaches to Nurturing

Most reptiles, amphibians, and fish adopt a "lay 'em and leave 'em" strategy, producing hundreds or thousands of eggs and counting on the odds that some young will survive without parental care. But among

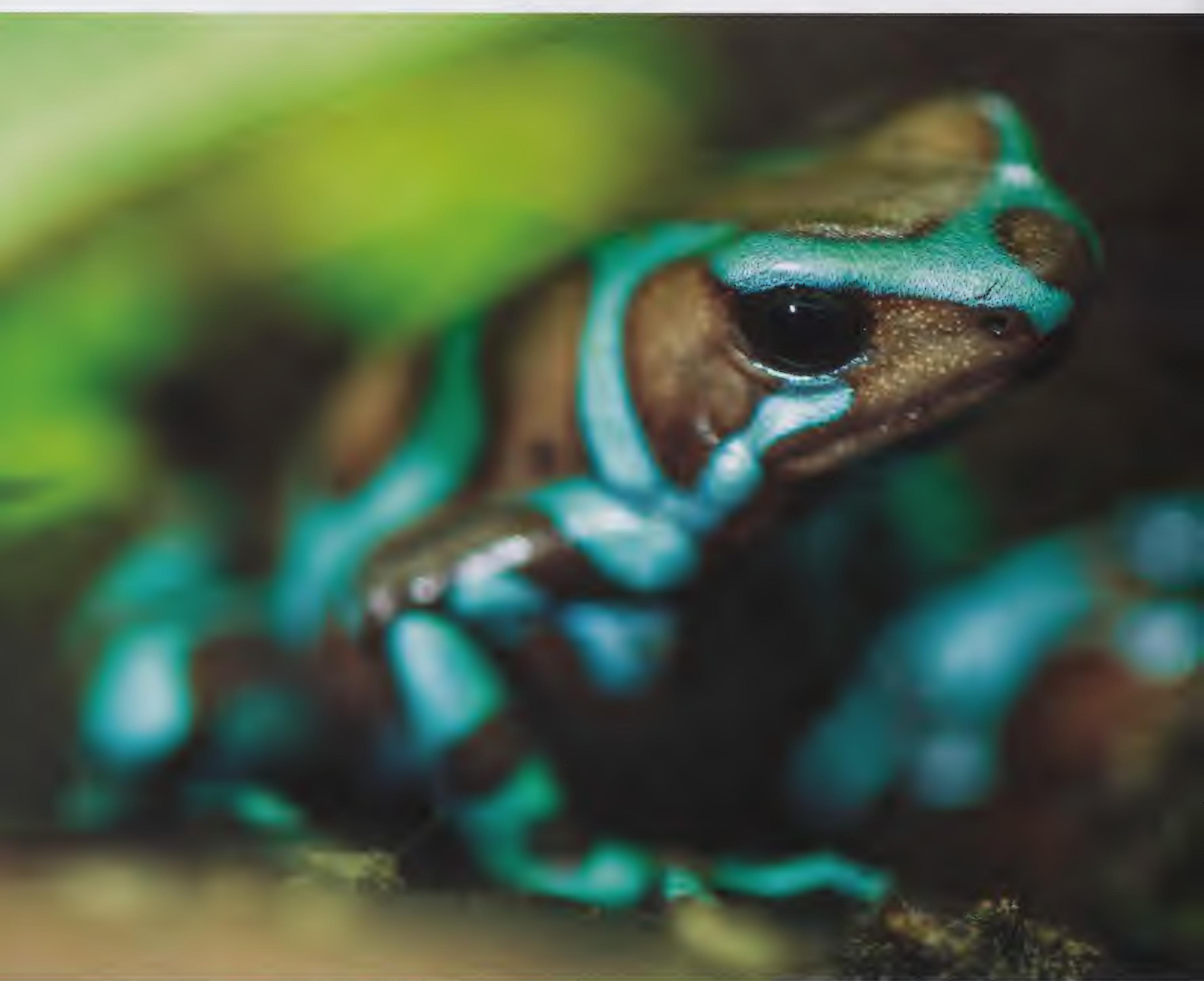


ERIC LONG/NASM



JESSIE COHEN/NZP

Father Knows Best



MEHGAN MURPHY/NZP

the minority that produce fewer eggs or offspring, males have found some creative ways to ensure the survival of their young.

Among reptiles, the fearsome king cobra is one example—the male guards the nest until his baby snakes hatch. Fatherly behavior also shows up among several kinds of crocodiles, such as the mugger crocs of India, Pakistan, and Sri Lanka, and gharials, a thin-snouted species native to India and Nepal. Baby crocs about to emerge from the egg chirp or call to their parents. Dads, as well as moms, excavate hatchlings from the nest on land and



ABBY WOOD/NZP



CONNOR MALLON/NZP



ABBY WOOD

carry them in their mouths to water, where they guard the young for a year or more. Dads also help some of the eggs hatch by rolling them around in their mouths.

Paternal care is especially evident in gharials, says Matt Evans, a biologist in the Zoo's Reptile Discovery Center (RDC), one of the few places in the U.S. that exhibit the species. "Gharials are very social and live in groups of males with huge harems of females," he says. "There is a lot of photo documentation of juveniles sitting on top of males' heads and hanging around males in the water."

A handful of amphibians also rely on helpful dads. Male marsupial frogs, a highly endangered species native to Central and South America, use their feet to boost newly-laid eggs into a pouch on the female's body, where they develop. Tiny poison-dart frogs, such as the green-and-black species at the Zoo's RDC and the multi-hued pumilio in our Amazonia exhibit, periodically check on the eggs during the two weeks it takes them to develop. Once the tadpoles hatch, they swim onto the male's back, where they are anchored by a mucus secretion. Dad then

FACING PAGE: Green-and-black poison frog fathers are tiny, but they play a huge role in tadpoles' survival. First they guard the eggs. Then they carry the freshly hatched tadpoles on their backs to pools of water.

LEFT FROM TOP: Silver arowana dads incubate eggs in their mouths. Male Japanese giant salamanders build and fiercely defend underwater dens, where females lay eggs. Arapaima fathers transport hatchlings by mouth to various locations.

carries them to a protected spot, such as a wet hole in a broken tree or branch or a tiny pool of water in a bromeliad plant where they metamorphose into frogs over the next several months.

The most dramatic examples of amphibian fatherhood, Evans says, are Japanese giant salamanders, one of the two largest salamanders in the world, and their smaller Appalachian cousin, the hellbender. Large males, known as den masters, take up residence in underwater dens where they build a nest, aggressively protect eggs laid by multiple females, and then guard the young for several months. Scientists and keepers at RDC hope to witness this behavior within a few years as four Japanese giant salamanders, currently off exhibit, reach sexual maturity. In hopes of making the National Zoo only the second zoo outside Japan to breed these giants, RDC staff have constructed breeding dens and alter water temperatures monthly to create a breeding season like that in the wild streams of Japan. In the meantime, you can spot one of our Japanese giant salamanders on Asia Trail.

The Zoo's Amazonia exhibit is home to several unusual fish fathers. The male arapaima, a strange air-breathing fish that can grow up to eight feet long, guards the eggs and transports them in his mouth to different locations. A related species, the arowana, goes a step further. Known as mouth brooders, male arowanas incubate the eggs in their mouths, and after the eggs hatch harbor hundreds of baby fish in their mouths to protect them from predators. The dads let the little ones out on occasion but are careful to find each baby and suck it back in to safety.

Father Knows Best



CONNOR MALLON/NZP

ABOVE: Luke, the Zoo's adult male lion, nuzzles one of the 13 surviving cubs he has sired.

FACING PAGE: Young golden lion tamarins hitchhike aboard their dad.

Paternal Primates

Our closest relatives, the great apes, are among the least involved fathers in the animal world. Yet small South American monkeys—tamarins, marmosets, and titi and owl monkeys—are among the best. Weighing only a couple of pounds, these tiny primates are always on the move, avoiding danger and foraging much of the day to keep up with their high metabolism, says biologist Kenton Kerns, who works with several families of golden lion tamarins and golden-headed lion tamarins in the Zoo's Small Mammal House.

The king of carnivores—the lion—is the only cat that deigns to participate in raising his young.

Females typically give birth to twins, and the babies plus her milk can add 25 percent to the mom's body weight—a lot to carry when jumping from branch to branch. "So that the family group can

travel and stay safe, mom carries the milk weight, and dad or older siblings carry the babies," Kerns explains. "When the babies need to feed, everybody stops. They hand the babies to mom to nurse, then they're handed back to dad." Most tamarin dads start carrying infants after one week, though Kerns recalls one "superdad," Eduardo, who always took the babies from mom by day three.

The bond between fathers and infants is especially strong among titi monkeys, which hopefully will breed soon in Amazonia's rainforest exhibit. Dads take over soon after birth and carry the baby up to 90 percent of the time. Studies have found that babies have a marked preference for their fathers and show a stronger stress response when separated from dad than from mom.

Caring Carnivores

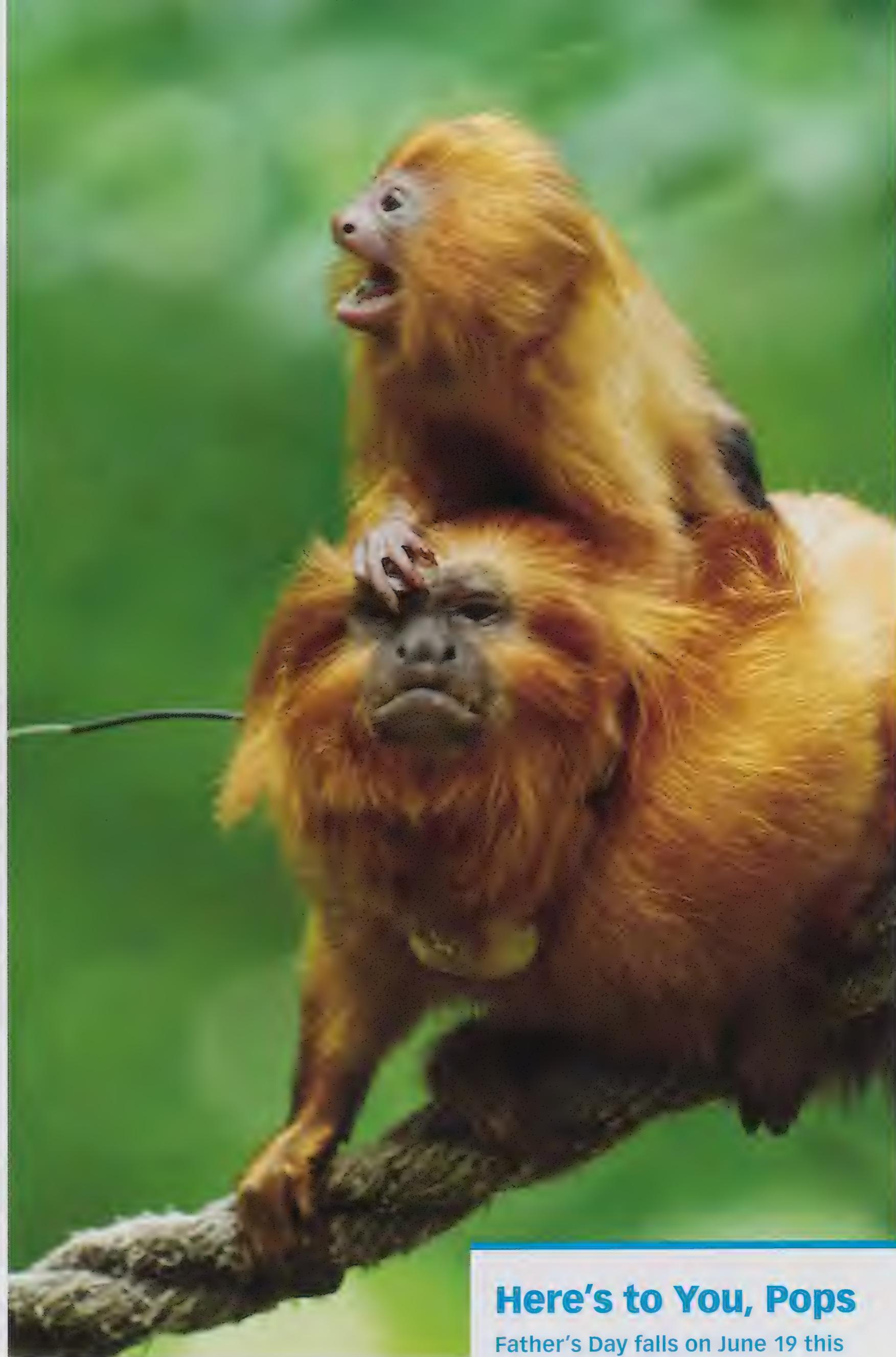
Even some carnivores embrace fatherhood, especially the canines. Male wolves, foxes, jackals, and African wild dogs play a crucial role in taking food to the mother while she is holed up in the den nursing the pups. When the pups are a bit older and mom can leave the den to help hunt, dad spends a considerable amount of time guarding, grooming, and playing with his offspring. As author Gwen Dewar has noted, "When it comes to paternal care, the devoted [human] dad who feeds his kids and walks them to school each day has more in common with a wolf than a chimpanzee."

The king of carnivores—the lion—is the only cat that deigns to participate in raising his young. The male lion's strategy is to protect the females in the pride so he can breed with them and to safeguard the cubs he sires with them. But he also acts as a teacher and at times even a caring dad. We typically think of the males as bullies that throw their weight around, especially when food is involved, but there are many cases where they allow females and cubs to eat first, says Craig Saffoe, the Zoo's curator of great cats. (You can see for yourself at the Great Cats exhibit, where Luke, a male, is on view along with some of his cubs.)

"By playing with cubs and batting them around, dads teach the youngsters how to be lions, how to be appropriately aggressive, how to interact with other cats," Saffoe says. "Young males especially learn from dad how to fight and how to protect themselves against other males."

While females are the chief disciplinarians in the pride, dads also growl, bark, or roar at misbehaving cubs, Saffoe adds. This usually occurs when youngsters have broken some rules of the pride, such as being too rough, sneaking food, or playing around when potential prey is nearby.

So, how does this fathering square with the male lion's reputation as a cub killer? "When they kill, it's almost always cubs sired by a rival male; with their own offspring, they're pretty protective," Saffoe says. "The evolutionary reason for that is to ensure survival of their own genes. Sometimes, we're too anthropomorphic and think every species can protect young no matter who the parents are, but that's



CLYDE NISHIMURA/FONZ PHOTO CLUB

Here's to You, Pops

Father's Day falls on June 19 this year. Looking for a great activity?

Come out to the Zoo and meet some of these super animal dads in person. You can see flamingos, cassowaries, rheas, kiwis, and emus at the Bird House. Poison-dart frogs and gharials live at the Reptile Discovery Center, while pumiliros (a type of frog) are at Amazonia. Golden lion tamarins and golden-headed lion tamarins enliven the Small Mammal House. And Luke the lion can be found at the Great Cats exhibit, along with some of the cubs he recently sired.

largely a human trait. Because of our status in nature, we can afford that luxury, but other animals have to be heavily invested in survival of their own."

Survival is ultimately what animal fatherhood is all about. Whether a male simply fertilizes hundreds of eggs on the chance some will survive, uses his energy to mate as often as possible without regard for care of his offspring, or takes pains to nurture his young and protect their mother, the goal is the same: ensuring that he passes on his genes to the next generation. That said, fatherhood among animals—as with people—is something to celebrate. **SZ**

— Freelance writer PHYLLIS MCINTOSH is a longtime Zoo volunteer.



LOOK!

Explore the Zoo through the lenses of our staff and Photo Club members. And then come see its living treasures for yourself.

"Look" is "the biggest word of all," the first one many of us learned, wrote Robert Fulghum in his famous essay "All I Really Need to Know I Learned in Kindergarten." It's also excellent advice for anyone visiting the Smithsonian's National Zoo. With some 1,800 animals representing 300 species—many of them at risk of extinction—the Zoo offers incredible opportunities to encounter the stunning wildlife with whom we share a planet.

Of course, that fantastic variety can also daunt visitors, making it hard to know where in the world

(literally!) to start. To help you focus your next visit, we asked those who know the Zoo intimately—its staff and the members of the FONZ Photo Club—to share their favorite photos of the wonders that await you.

We invite you to savor these images and hope they'll inspire you, for the first or four hundredth time, to come and look at the Zoo in a whole new way.

We also invite you to share your own Zoo photos by sending them to zoogoer@si.edu and to learn more about the Photo Club at fonz.org/photoclub.

Emperor newts at the Reptile Discovery Center caught the lens of Photo Club member **Istvan Kerekes**. The orange dots lining the amphibians' backs emit toxins when a predator grabs the newt.



Necessity became artistry for Photo Club member **Rob Currie** while shooting at the Grevy's zebra enclosure. Its mesh fence defies large lenses, so Currie focused on just one part of the animal, with stunning results.

LOOK!





FACING PAGE, TOP:

Mark Van Bergh, veteran and mainstay of the Photo Club, captured this lemur tree frog during a special club opportunity at Amazonia. A handheld flash and diffuser equipped him to take a glare-free image through glass.

FACING PAGE, BOTTOM:

"Bao Bao is always fun to watch," says Photo Club member **Linda Glisson**, who had the good fortune to spot the playful young panda at a moment when she "seemed aware of her audience, playing peek-a-boo with zoogoers."



ABOVE:

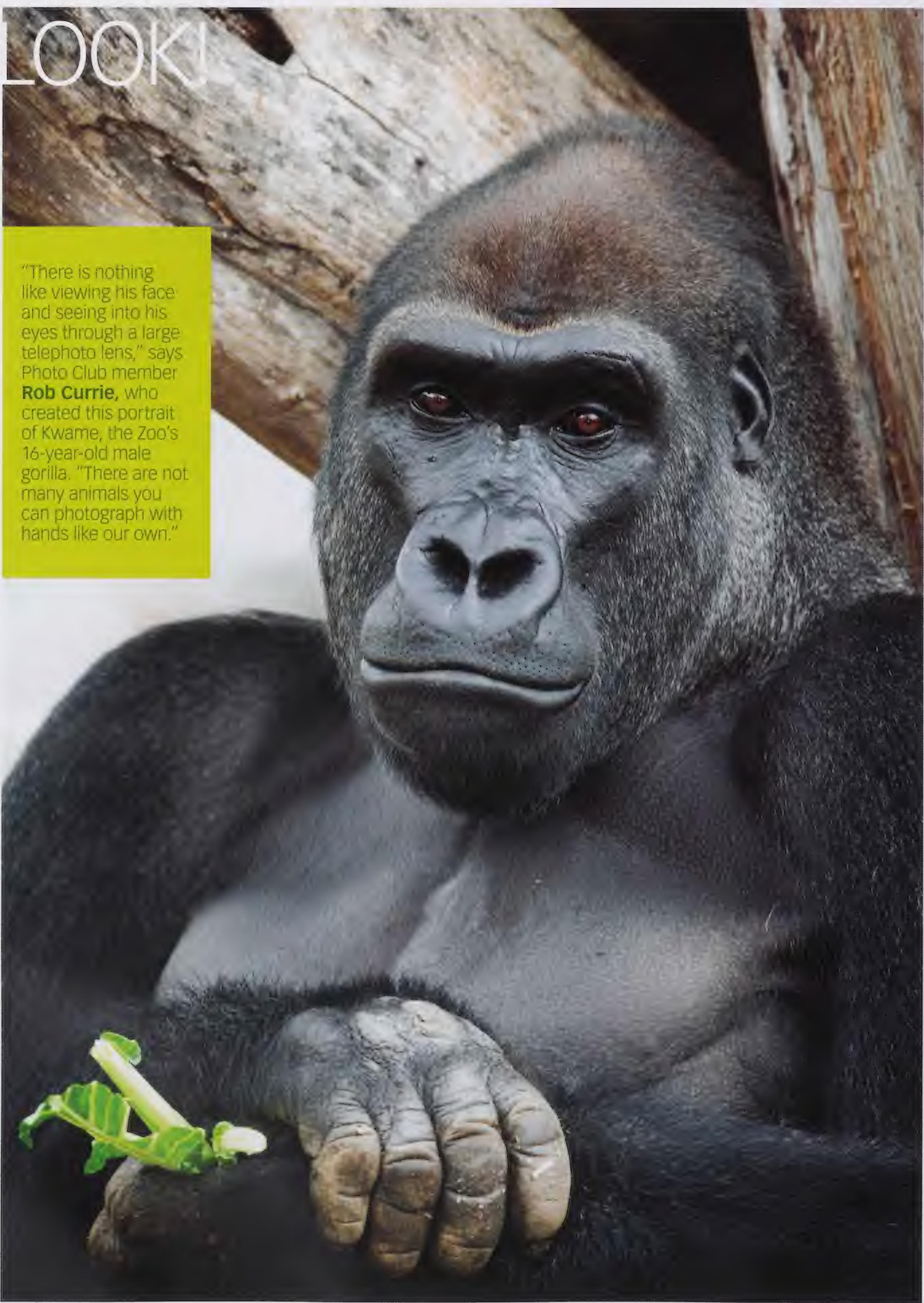
Daniel L. Crooks, a Photo Club contributor, was exploring American Trail when he came across a scene that sums up a key facet of the FONZ mission: creating connections between wildlife and people.

LEFT:

Animal keeper **Chris Crowe** was cleaning a black-footed ferret enclosure when the animal—bred to be released into the wild—peered warily at him for a spectacular second before hiding again.

LOOK

"There is nothing like viewing his face and seeing into his eyes through a large telephoto lens," says Photo Club member **Rob Currie**, who created this portrait of Kwame, the Zoo's 16-year-old male gorilla. "There are not many animals you can photograph with hands like our own."





Gil Myers, biologist at the Cheetah Conservation Station, doesn't mind catching a vulture's eye. Indeed, he knelt down in the Ruppell's griffon vulture enclosure, hoping that Tuck, a keenly curious bird, would glance down to see what was happening. Tuck obliged.

LOOK!



ABOVE:

FONZ web editor **Mark Ibrahim** took a busman's lunch break to focus on the Zoo's aptly named elegance coral colony, now on exhibit in Amazonia, which he once helped feed as a volunteer.

RIGHT:

"I love photographing the reptiles," says Photo Club member **Istvan Kerekes**, who submitted this shot of a false water cobra. "They make great subjects, and each time it's a unique story of what's happening in their world."



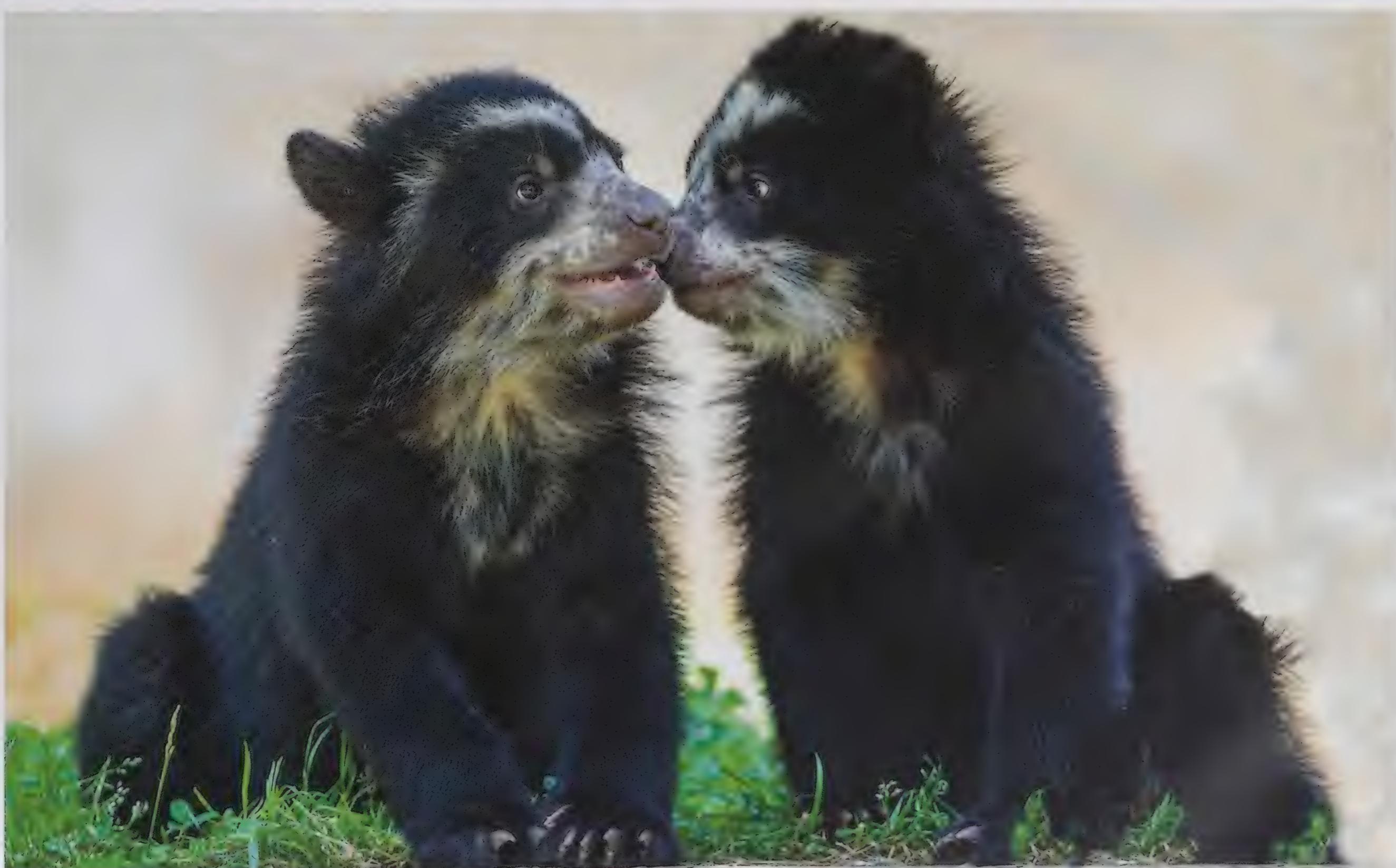


LEFT:

Snack time at the Reptile Discovery Center proved enriching for both a green tree monitor lizard and biologist **Matthew Evans**. He captured the brainy critter's slow but successful problem-solving to snatch food hidden at the bottom of holes drilled into the log.

BELOW:

Photo Club member **William Bitman** delighted in the tenderness between Andean bear cub siblings—a once and, we hope, future highlight at the Zoo.







one PIECE at a time

Surf your way along Olmsted Walk and encounter colorful creatures sending out an SOS from the oceans that sustain all life on Earth.

BY LISA DUCHENE

PHOTOS FROM
THE WASHED ASHORE
PROJECT

At first glance, Zora Belle the rockhopper penguin is just a fun, welcoming, larger-than-life character. Her eyes are a warm, fiery red. Her bright-orange beak turns upward in a friendly greeting. Funky yellow spikes pop up from her head like an edgy hairdo.

A closer look reveals far more to her story. Zora Belle is made of discarded plastic objects found upon beaches: toilet seats and fake logs, black pipes and yellow scrub brushes. Her orange beak includes safety cones and a toy dinosaur.

Then there's Flash: a brilliant, blue marlin fiercely rising from the surf of his sculpted base. Flash was formed of all sorts of plastic trash: slices of big blue barrels, blue and white grates and grids, an umbrella handle, and clear bottles—bottles upon bottles upon bottles.

Zora Belle and Flash are just two of 17 vibrant, larger-than-life marine creatures, all sculpted of plastic trash found on beaches. They're part of the "Washed Ashore: Art to Save the Sea" traveling exhibition, which will grace Olmsted Walk and some of the buildings along it from May 27 through September 5. (See "Dive Into the Exhibit" on page 33 for a guide to sculpture-spotting.)

Unhappy Meals

Though modern pieces of art, Zora Belle and Flash are not abstract. Neither is the problem they embody. Each animal character in "Washed Ashore" testifies to the enormity of pollution in Earth's oceans. Millions of tons of plastic wash into the sea each year—or are dumped there. That deadly tide could increase tenfold by 2025.

For a firsthand glimpse of how marine debris affects wildlife, swing by American



Less dramatic than a shark, plastic pollution can be just as lethal.

Trail to see Tinkerbell, the Zoo's brown pelican. She was rescued off the Florida coast in 2001 after being ensnared in plastic fishing line. The superstrong filament had sliced into her wings, destroying crucial ligaments. Tinkerbell never flew again. Had she not been rescued, she would have perished, probably from starvation.

Nearby on American Trail frolic the Zoo's endlessly engaging seals and sea lions. They

feast three or four times a day on fish, but many of their wild cousins are less fortunate. Marine mammals and sea turtles often mistake plastic bags for food. The bag can then wreak havoc on the animal's internal organs. It can also create a false sense of fullness—dissuading the creature from finding more food, leading in turn to malnutrition.

Even the Zoo's smallest creatures—coral polyps on exhibit in Amazonia—



"What Can I Do?"

SPREAD THE WORD!

Bring family and friends to see "Washed Ashore" (May 27-Sept. 5), then show us on social media how you're making a difference by reducing, reusing, and recycling discarded plastics. Use #ScienceSavesSeas to share your wildlife-saving actions.

BAG THE BAGS

Pack your purchases in reusable bags rather than the familiar plastic ones. If you're caught unprepared, seek ways to repurpose or recycle the plastic. You can also buy reusable sandwich bags in Zoo shops.

SCORE A BASKET

Have a single-serving coffee maker? Buying a reusable basket means an end to those piles of used plastic cups.

SKIP THE STRAW

Sip straight from the glass, preventing huge amounts of wasted plastic. For both environmental and animal-safety reasons, Zoo concessions do not offer straws.

RESET THE TABLE

Planning takeout or delivery for dinner? Use your own silverware and tell the restaurant to hold the plastic utensils.

THINK DRINK

Get a metal, ceramic, or other reusable container for your water and other beverages rather than buying plastic bottle after bottle.

KEEP EXPLORING OPTIONS

Think of something plastic that you use, particularly just once. Is there an alternative material you could use instead?

one PIECE at a time

are imperiled by plastic pollution in the ocean. Coral conservationist Mike Henley, a former Zoo keeper, has found polyps shrouded in plastic during his reef dives. It can prevent the polyp from opening and catching food, and even wear away the animal's tissue. Henley and Smithsonian scientist Mary Hagedorn are pioneering ways to collect and deep-freeze coral polyps in the hope of repopulating reefs destroyed by pollution and global warming.

Henley gently removes any reef-smothering plastic he finds, but that's only, well, a drop in the ocean. Confronting this global eco-crisis will take massive determination and a willingness to make lifestyle changes. (See "What Can I Do?" on page 31 to learn how you can help.)

Forging such determination requires awareness of the issue. That's where artist Angela Haseltine Pozzi comes in.

From Sorrow to Shoreline

"Everything in my life led here," says Haseltine Pozzi. "I feel this is my calling." She grew up on the coast of Oregon, where she loved exploring tide pools and learned the name of every creature she found.

Haseltine Pozzi also grew up understanding the power of the arts. Her dad was a museum director, her mother a professional artist. Haseltine Pozzi studied to be a dancer and loved the collaboration that went into performances. For 30 years, she taught art in public and private schools as well as at universities and museums.

Life changed in 2004, when Haseltine Pozzi lost her husband and best friend of 25 years, a fellow artist, to complications from a brain tumor. She returned to the Oregon coast in 2007, grieving and broken. "I decided the only thing to do was go to the ocean and start a new life," she says. "I felt the ocean would always be there for me—reliable and unchanging."

She and her dog walked the shoreline day after day—stepping over the plastic trash on the beach, trying not to see it.

"Every time we go to buy something, we need to think about what will happen to it. Where is it going to end up?"

ARTIST ANGELA HASELTINE POZZI



Freshly collected seashore debris awaits sorting by size and color.

She began making and selling artwork fashioned from thrift store finds.

Then the debris really started to nag at her. One day, the line of plastic stretched as far down the beach as she could see. She watched as other people ignored it to focus on beautiful things like shells and agate.

Haseltine Pozzi started to wonder. What would make people pay attention to that plastic trash? What would be beautiful and catch the eye? What if she created something so big, so global that it could reach the whole world and save the sea?

Putting It Together

The result is the Washed Ashore Project. "I thought it through and just got started," says Haseltine Pozzi. "I basically believe people are good. Everybody loves the ocean. Nobody wants to hurt it. I needed

to bring ocean debris to them in a way that they'd want to see the sculptures and get their pictures taken next to them and tell everybody about them. This is about reaching everybody."

Haseltine Pozzi inspired a dedicated staff and volunteers to help with her ocean-size undertaking. Since 2010, they've removed 18 tons of plastic trash from the seashore and transformed it into 68 sculptures. A sculpture takes six to eight months to create.

Each plastic piece in a sculpture represents the handiwork of many people. One person picked up that piece on a beach,

someone else washed it, and another put it in the right bucket. Someone cut it to the right size, someone else drilled a hole, another set of hands wired it in place, and yet another screwed it solidly into the sculpture.

"Every little piece of these sculptures shows that every little action does add up," says Haseltine Pozzi. "It does matter. It takes hundreds of people to make the sculptures. Just as in life, working together can make big things happen."

The Washed Ashore Project is designed so that anyone can work on a sculpture. People drop in for a few minutes or a whole day and contribute to the artwork in progress. The organization matches the skill level of staff and volunteers to the steps of the process—reflecting Haseltine Pozzi's years of experience teaching art to people of all ages and skill levels.

Haseltine Pozzi does the heads and finishing work. "I really feel like I'm creating the voices of the animals," she says.

The Power of One

Helping those animal voices be heard is the Zoo's goal in hosting the "Washed Ashore" exhibit. Every animal in the park—indeed, every animal on the globe—depends in some form or fashion on the oceans that blanket 70 percent of the planet's surface.

The majority of Earth's animals—from microscopic organisms to the blue whale,



When it comes to saving the sea, your two arms can do more than an octopus's eight.

largest of all creatures—dwell in the sea. Coral reefs alone provide habitats for some 4,000 fish species, and many others depend on reef dwellers. Millions of people rely on coral reefs for their livelihoods.

That's not all. Tiny marine plants produce at least half the oxygen in our atmosphere. The vast expanses of saltwater absorb heat from the sun, and ocean currents distribute it around the world, making habitats more life-friendly. Sea creatures feed a host of species, including ours.

Given the vastness of the plastic pollution problem and the incredibly high stakes for life on Earth, it's all too easy to feel overwhelmed, even defeated, by this ecological emergency. Reducing the amount of plastic invading the ocean will take "substantial resources and time," warns a recent article in *Science*. A particular challenge will be improving waste management in developing countries, where populations and economies are rapidly growing.

So what do we do? The Washed Ashore Project team suggests focusing on a single

number—one. What is one thing that one person can do to reduce the amount of plastic that goes into the trash?

"Simply changing one thing," says Patrick Chandler, the project's education director, "makes you think about it in a different way." Just as adding a piece of plastic to the trash compounds the problem, subtracting one is a step toward a solution.

"Success looks like a few million people making a different choice of the materials they use," says Chandler. That's particularly true if changes in consumer behavior spur industry to create new, more ocean-friendly products.

Both Chandler and Haseltine Pozzi see the disturbingly beautiful "Washed Ashore" sculptures as more than environmental alarms. They want the exhibit to be a wave of hope that inspires everyone who sees it to end plastic pollution the way it began—one piece at a time. **SZ**

— LISA DUCHENE is an independent writer-editor with more than two decades' experience writing about marine issues.

Dive Into the Exhibit

Here are the cool, colorful creatures you'll meet as you walk downhill from the Connecticut Avenue gates.

PARROT FISH

Just inside the gates

SEA STAR

Opposite Przewalski's horses

BLUE MARLIN

Outside Visitor Center

SEA LION PUP

Opposite Small Mammal House

YELLOW JELLY & ORANGE ANEMONE

Visitor Center lobby

GIANT PACIFIC OCTOPUS

In front of Great Ape House

WHALE RIB CAGE & FLIP-FLOP FISH

Zoo in Your Backyard

FISH BITE FISH

Think Tank

TUFTED PUFFIN

Panda Plaza

NORTHERN FUR SEAL

Lemur Island

SHARK & ROCKHOPPER PENGUIN

Outside Elephant House

SUNSET BEACH MURAL

Mane Grill

GIANT SEA JELLY

Lower Zoo entrance

CORAL REEF

Amazonia



18th BIRTHDAY PARTY FOR BELL BELL

Saturday, August 20, 2016

Private Member Event 9-11 A.M.

- Animal presentations
- Special activities and giveaways
- Birthday cake
- Member updates and more

Public Event 11 A.M. – 2 P.M.

- Frozen birthday treats for the pandas
- Panda keeper demonstration

FRIENDS OF THE NATIONAL ZOO



BEAST BITS

fun fact
Some types of hermit crabs can live to be more than 30 years old!



MEGAN MURPHY/NZP

How a Crab Grabs

Land hermit crabs have different-size claws. They use their big left claws for defense, balance, and holding onto branches. Their smaller right claws are perfect for collecting food and getting it into their mouths. They're not fussy eaters. Fruits, vegetables, meat, and fish are all favorites, but hermit crabs also eat decayed wood, plants, leaves, and grasses.

WATCH AND LEARN

Rats are very social and supersmart! They live in groups and learn how to get food by watching each other. In colonies near water, scientists have seen rats teach themselves how to catch fish. They even dive under the surface for shellfish. Rats learn what kind of food is safe to eat by smelling each other's breath. (Don't try that in the school cafeteria!)



ERIN STRONBERG

You can see land hermit crabs and Norway rats at the Zoo's Think Tank exhibit, where you can learn all about animal intelligence.





**CREATURE
FEATURE**

Orangutans
are some
of the best
tree-climbers
on the
planet.

O POWER

BY PAMELA BUCKLINGER

What's That in the SKY?

Want to see orangutans at the Zoo? Try looking up. The O-Line, a one-of-a-kind transportation system for apes, stretches between the Great Ape House and Think Tank—50 feet above the ground! Watch where you stand, though, because the orangutans sometimes take bathroom breaks in midair.

GREAT Apes

Orangutans are one of five kinds of great apes. The others are gorillas, chimpanzees, bonobos, and humans. Want a fast way to tell monkeys from apes? Most monkeys have visible tails, and apes never do.

Big RED

Adult males are four to five feet tall and weigh up to 200 pounds. Females usually weigh half that much. Males also tend to have longer hair. Orangutans' orange-red hair is one of their most striking features.

SHAPE Shifters?

"Orangutan" means "person of the forest" in languages spoken on Borneo and Sumatra. Those islands are the species' sole habitats. Some native people protected orangutans, because they thought the human-looking apes might be people who changed their shape to hide in the trees.

Ape ARCHITECTS

Ever build a tree house? Orangutans in the wild spend most of their lives in trees. Their strong hands and feet are perfect for grabbing onto branches—or the O-Line. Orangutans even sleep in trees, building nests out of branches and leaves.

YOUR TURN
ORANGUTAN MOMS TEACH THEIR YOUNG HOW TO EAT. They learn where they can find the best fruits and nuts in the forest, when those treats are ripe, and how to pick them.

MEGAN MURPHY/NZP

MEALS on the Go

Orangutans' favorite snack is fruit. In the wild, they eat several hundred varieties. They'll also eat leaves, bark, insects, and bird eggs. Because much of their food can be found up in trees, orangutans rarely need to come down. They even hang upside-down by their legs to reach the tastiest treats.

Calling All ORANGUTANS

Orangutans have throat pouches that act like built-in speakers. The pouches help the apes, especially males, produce sounds that echo throughout the forest. Because males usually live by themselves, these calls help them communicate with other apes. Some calls tell females, "I'm over here!" Others warn fellow males, "Stay away!"

Going, GOING, Gone?

Orangutans are endangered. Only about 70,000 remain in the wild, on two islands in Asia. They once lived over a much larger range. The apes' biggest threat is deforestation. Much of their habitat is being cut down so farmers can grow palm oil and other crops.

At the ZOO

Swing your way along Olmsted Walk to see orangutans at the Great Ape House and Think Tank—or maybe on the O-Line in between.



Can you work with a parent and create a meal that orangutans would like to eat? Combine the ingredients below into a big bowl. Enjoy!

- 2 peeled bananas, cut into slices
- 1 bunch grapes
- 2 apples, cored and cut into chunks
- 2 kiwis, peeled and sliced
- 1 orange, peeled and separated into segments
- 1 cup shelled walnuts
- 2 tablespoons honey

Primate Soul Mate

Keeping gorillas, orangutans, and other primates happy and busy is a huge challenge. And Heather Harl loves it.

Heather Harl is one of eight primate keepers at the Zoo. They provide all care for the animals, including feeding them and monitoring their behavior.

Toy Story

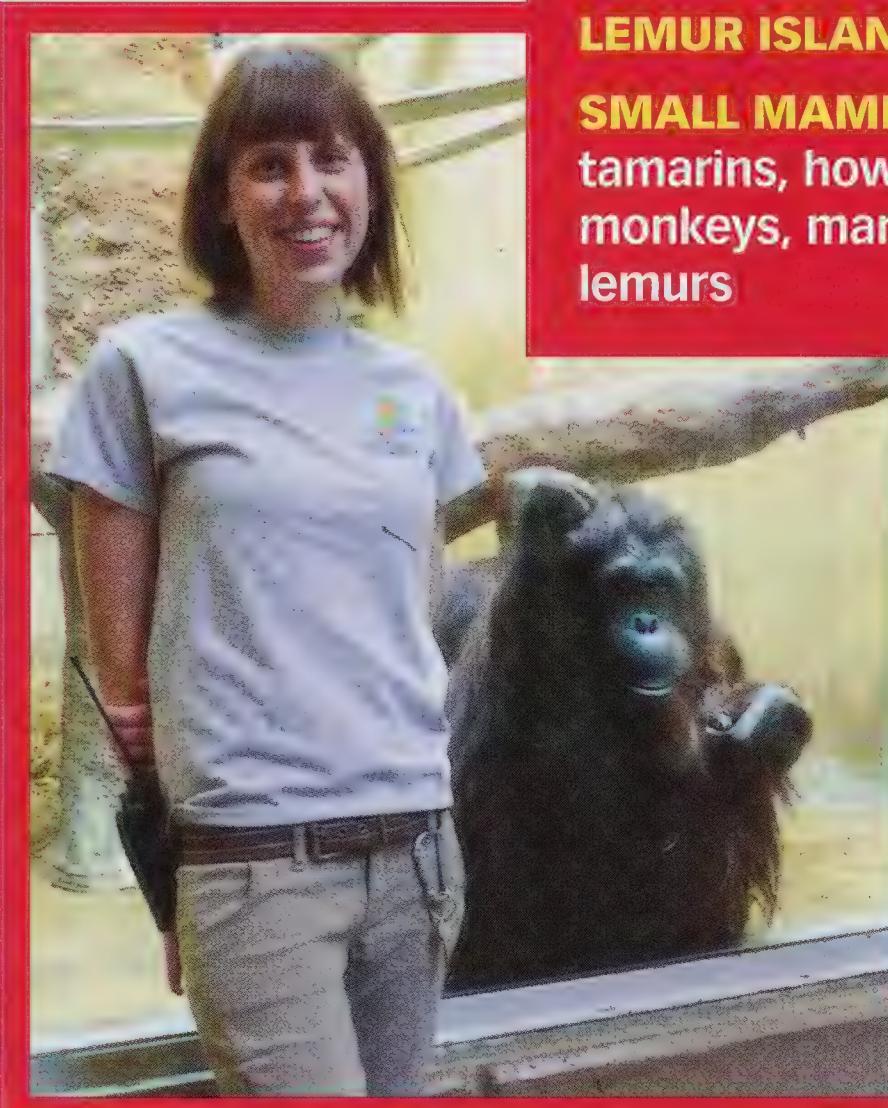
One of Harl's jobs is coming up with ways to enrich the animals' days. Sometimes that means giving the primates paint or other unfamiliar materials to discover and play with. She also puts on music for them to enjoy. (The gorillas occasionally get classical.) Now and then, primates even get to monkey around with iPads!

Other times, the keepers build puzzles for the primates to solve, often involving food. For example, Harl recently took an empty vitamin jar, drilled holes in it, put sunflower seeds and raisins inside, and screwed the top back on tightly.

When she gave the jars to the animals, each tried a different strategy to get the yummy treats out. Some shook the jars, others rolled them on the ground, and still others held them underwater. "That was the fastest—everything floated right out," Harl says. "It's so great to see them try different solutions to solve the problem." (Only one primate learned that she could simply unscrew the top.)

Stick Your Tongue Out

To make sure the primates stay healthy, keepers train them to come close to the mesh walls of their enclosure and hold up specific body parts. "We might ask them to present their arm or their belly so that the vets can examine it," Harl says.



COURTESY SMITH/FONZ

On the Prowl for Primates? Here's Where to Find Them.

GREAT APE HOUSE: gorillas, orangutans

THINK TANK: orangutans, guenons

GIBBON RIDGE: gibbons

LEMUR ISLAND: lemurs

SMALL MAMMAL HOUSE: tamarins, howler and saki monkeys, marmosets, lemurs

The primates all get check-ups every two to three years, including their teeth! Sometimes they need medicine, and often it's the same

kind that people get. Last winter, the Zoo's silverback gorilla, Baraka, wasn't feeling good. The Zoo's vets examined him and found that he had the flu. Some medicine did the trick, and Baraka was soon back on his feet again.

Gibbons Are the Greatest!

Harl likes all the Zoo's primates, but her favorites are the gibbons.

"People forget that they're apes, because they're smaller," she says. "They're called 'lesser apes.' They live in trees, like orangutans, and they're total acrobats."

The Zoo has three white-cheeked gibbons and a pair of siamang gibbons. They all live at Gibbon Ridge. The biggest are only about 35 pounds.

Gibbons like to sing. "They make wonderful sounds every morning and every night," Harl says. "Each one has its own call. They go one at a time, and it's like a beautiful melody."

Unfortunately, gibbons are among the most threatened primates on Earth. "People think they might be the first primate to go extinct," Harl says. Some species are critically endangered, with fewer than 100 left in the wild.

To help build gibbon populations, the Zoo takes part in a breeding program. It pairs certain gibbons to see if they'll mate. That's why some animals move around among zoos. "It's hard when you care for them to say goodbye," Harl says. "But you know they're going to a place where they can get to know other animals and start a family."

—JEFF GARIGLIANO

FONZ Children's Classes

Learning is WILD at the National Zoo!

FONZ classes use hands-on activities, crafts, and the Zoo's animal collection to help your child learn about environmental conservation and life science while strengthening important developmental and social skills. Whether you prefer a regular, weekly experience or a one-time event, you're sure to find a class to suit the needs of your young animal lover.

Classes do not include behind-the-scenes visits or direct contact with the animals, but do use pelts, bones, feathers, and other touchable artifacts. Pre-registration is required for all children's classes.

All 2016-2017 class series are now open for registration! Classes begin September 2016. **See detailed descriptions and register at fonz.org/classes.**

Class Series:

\$150 per child (FONZ member)
\$187.50 per child (non-member)

Weekend Classes:

\$28 per child (FONZ member)
\$35 per child (non-member)



PRESCHOOL CLASS SERIES

Our Tadpole and Frog class series meet once a week for five weeks. Children learn about animals and the natural world while building important academic, developmental, and social skills. See the full list of options at fonz.org/classes.

Tadpoles (ages 2-3)

Tadpole classes at the National Zoo are perfect for 2- and 3-year-olds preparing for preschool. A new animal each week helps kids explore key concepts like numbers, shapes, and letters. Classes include Shapes with the Apes, Backyard Buddies, and 1, 2, 3 to the Zoo. Classes meet one morning each week, Monday through Saturday, 10:00-11:30 a.m. Details at fonz.org/classes.

Frogs (ages 3-5)

Frog classes are just right for 3- to 5-year-olds who are ready for new challenges. We'll explore a different animal each week with themes like Animal Builders and The Magic Zoo Bus that stretch both our brains and our imaginations! Classes meet on Tuesdays or Wednesdays, 1:00-2:30 p.m. Details at fonz.org/classes.



WEEKEND PRESCHOOL PROGRAMS

Weekend preschool programs are single classes designed for children and their adult buddy to enjoy together! Interactive stations introduce participants to featured animals and concepts, then a hands-on discussion gets kids ready to visit the animals of the day!

Wild Kratts

Get ready for a special Zoo mission—learning about animals with real creature power technology!

Ages: 4-6

June 4-5 (9-10:30 a.m.)

Panda-monium!

Get to know the Zoo's favorite family! What makes pandas so wonderful? Why are they so endangered? What can we do to help?

Ages: 2-3 and 4-6

June 11-12 (9-10:30 a.m.)

**Register
your child for
all five preschool or
homeschool class series
before Sept. 30th and
save an additional
10 percent!**



HOMESCHOOL CLASSES

Homeschool classes at the National Zoo investigate a new theme each academic year. Each five-week class explores the theme from a new angle, discovering new connections between the animals and the ideas we study. Hands-on science experiments, inquiry-based learning, and Zoo Walks led by our expert teachers bring these concepts to life and address next-generation science standards. Visit fonz.org/classes to see more information and register your child.

FONZ RESOURCES

fonz.org

Member/Donor Information
202.633.2922

Special Events
202.633.4470

Corporate Events
202.633.3045

Camps and Classes
202.633.3024

Volunteer Services
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Comments? Questions?
Please email us at
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Not a FONZ member yet?
Call 202.633.2922
or go to
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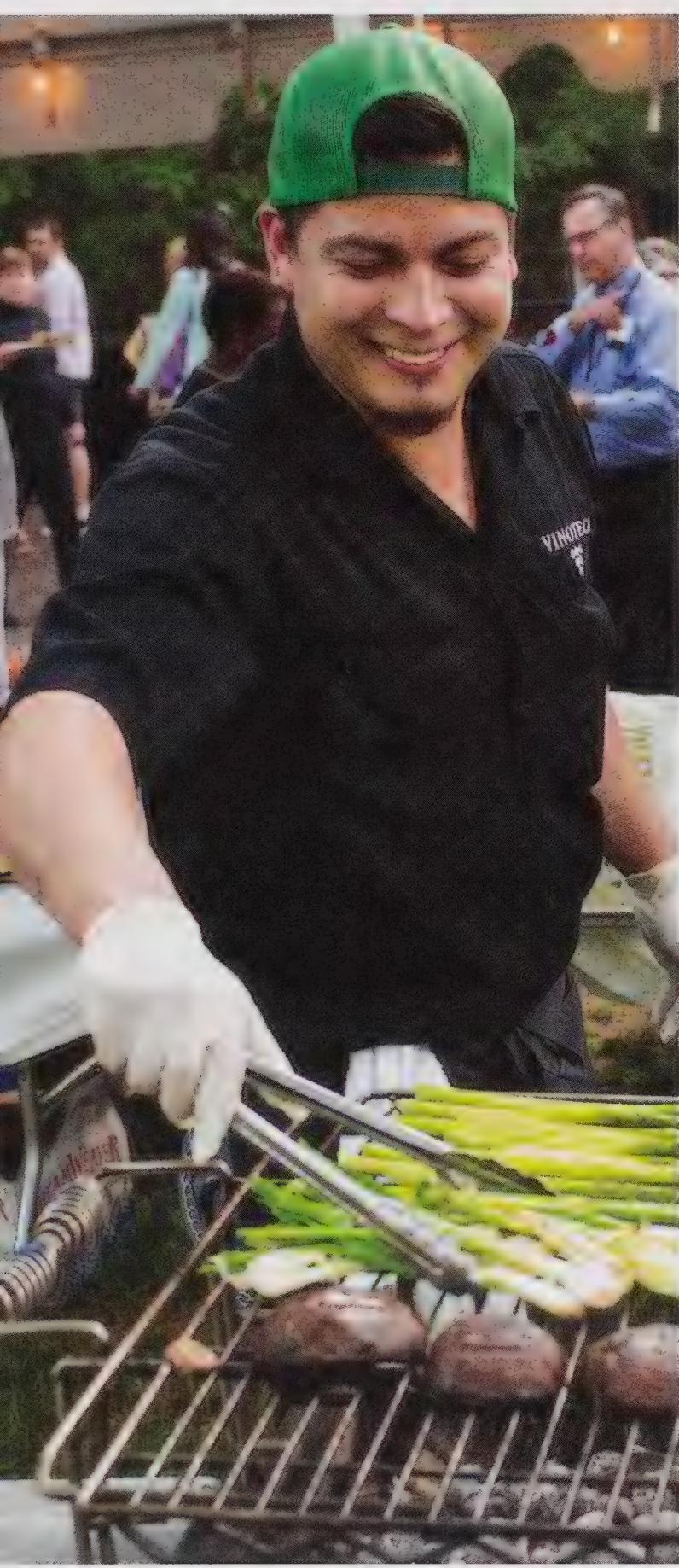
Animal Classification (5-13 years)

In 2016-2017, our homeschool classes will take on taxonomy! Each five-week series will dive deeply into a class of animals. Students will develop a rich understanding of the wide range of animal groups and of the critical role that classification plays in conservation science.

Our first fall series, **Amazing Aves**, explores the world of birds. Each week focuses on a different group, from flightless ratites to clever corvids. Classes meet in the Zoo's classrooms one day a week.

Ages 5-7: Mondays

Ages 8-13: Thursdays



THANK YOU to the many sponsors, restaurants, and wineries that supported our annual ZooFari event. Because of your generous contributions, ZooFari was once again a fantastic night of food, fun, and entertainment. Best of all, the event raised money to support the Zoo!



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- El Centro
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- Georgetown Cupcake
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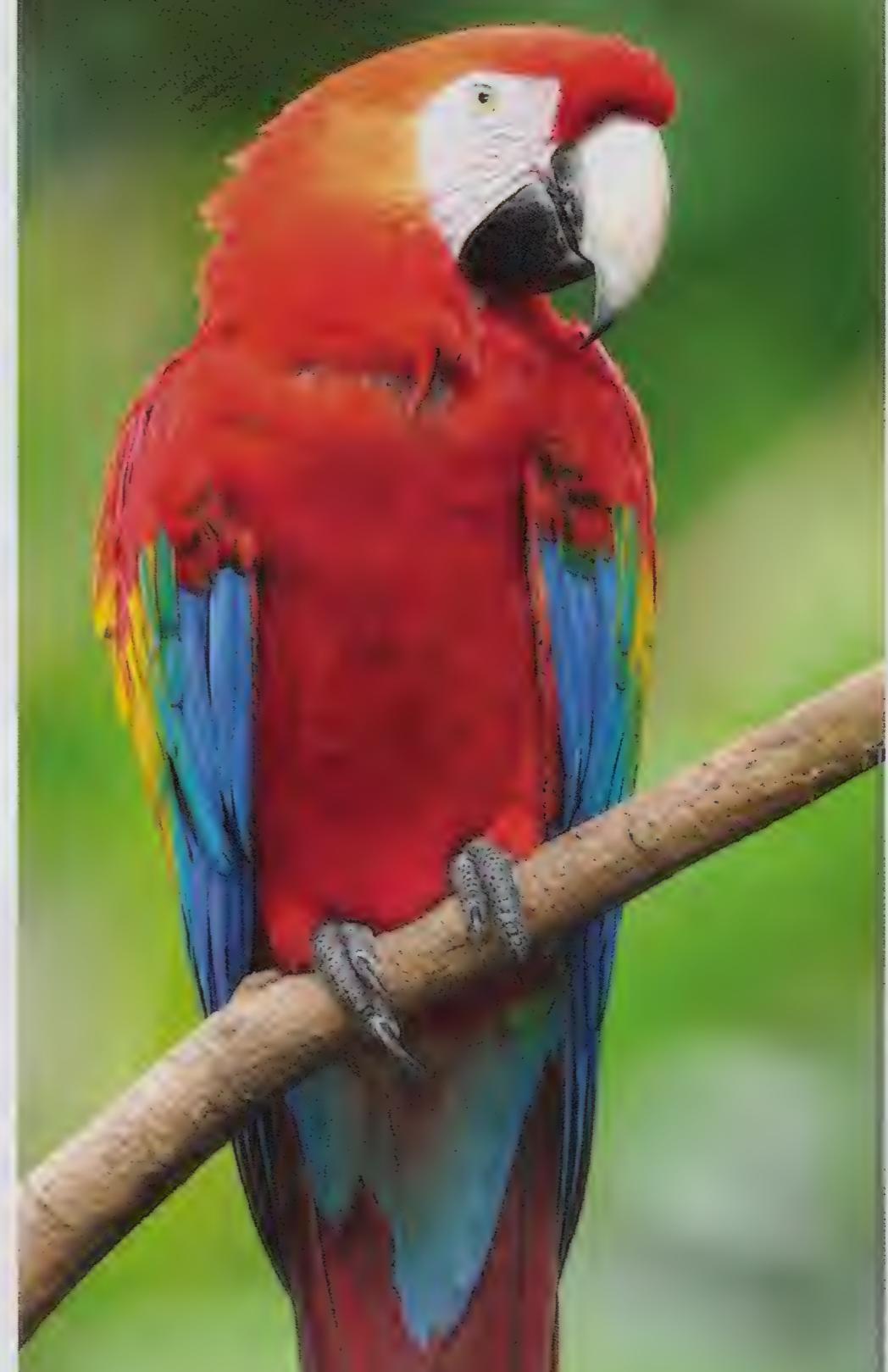


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We Need You: Support the Zoo!



CLYDE NISHIMURA/FONZ PHOTO CLUB

FONZ members provide critical resources for the Smithsonian's National Zoo and Conservation Biology Institute. Government funds cover only 70

percent of the Zoo's operating budget, and about half of our research and capital budgets.

Thanks to the generosity of you and other FONZ members, we are able to build world-class habitats for our animals, educate the 2.4 million people who visit the Zoo each year, conduct pioneering research to save species around the world, and much more.

Here are just a few examples of your gifts at work:

- perfecting artificial insemination and boosting the population of giant pandas worldwide,
- breeding and releasing black-footed ferrets (once thought extinct) into the wild in North America, and
- successfully breeding and hand-rearing Micronesian kingfishers, birds now extinct in the wild.

We could not accomplish these victories without you, and we thank our members for supporting the Zoo and FONZ. Together, we save species!

Watch your mailbox and your email for a request to take part in our *new* appeal. Prefer to give online? Visit nationalzoo.si.edu/springappeal. Have questions? Contact Katharine Kane at 202-633-3290 or kanek@si.edu.

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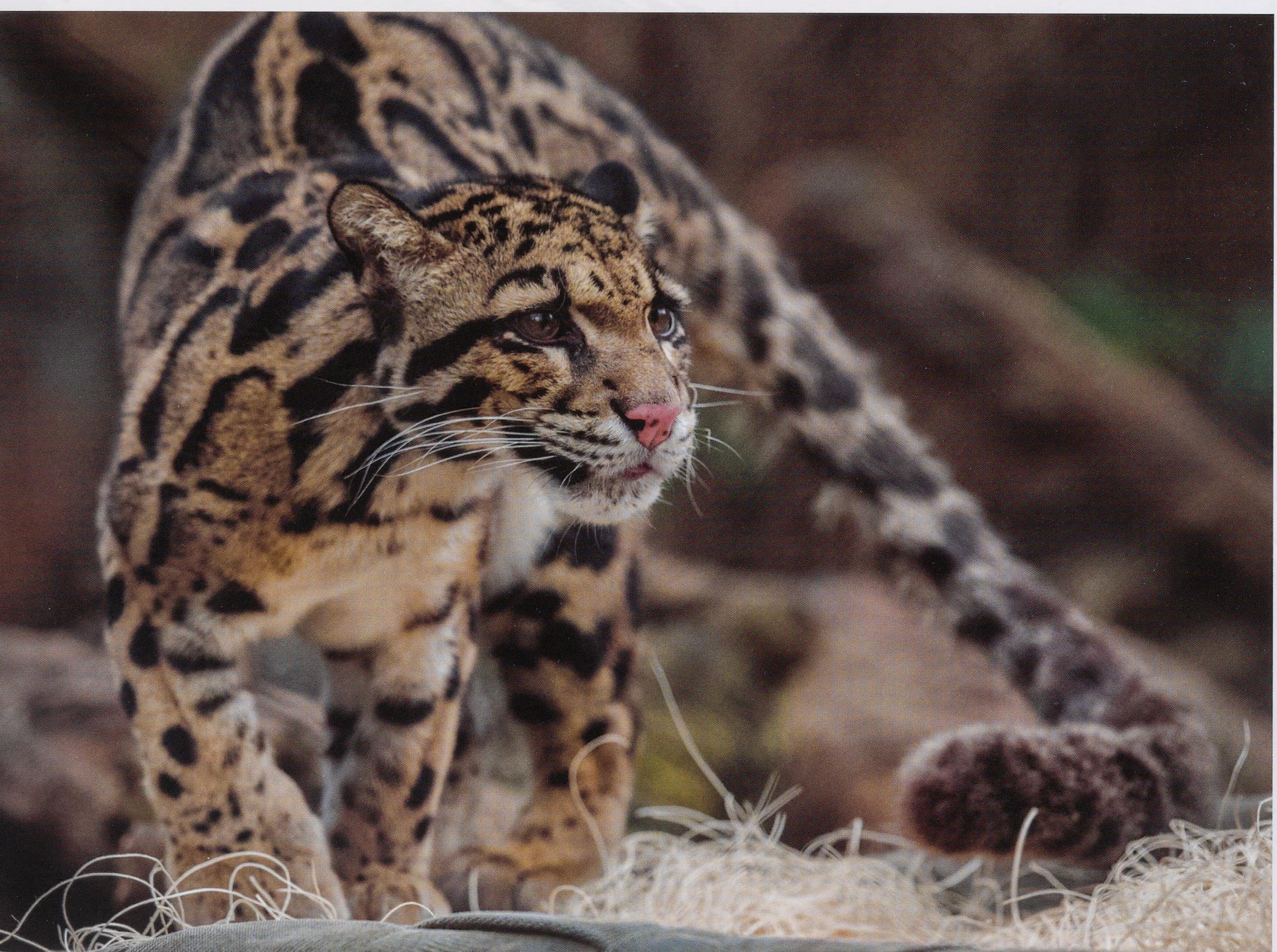
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Great day.

Good day.



BARBARA STATAS/FONZ PHOTO CLUB

Asia Trail Triumph

Walking along Asia Trail after photographing Bei Bei

during a special FONZ member preview in January, **Barbara Statas** spotted a rare opportunity: a postcard-perfect moment with the clouded leopard Mook. Keepers had just strewn enrichment treats around the enclosure, so she was very active.

Photographing clouded leopards is tricky. The mesh fence surrounding the enclosure is difficult to shoot through, especially in bright light. And the cats tend to be elusive. This engaging image results from a happy alignment of conditions: an active animal, an overcast sky, the talented eye of a FONZ Photo Club stalwart, and perfect timing.

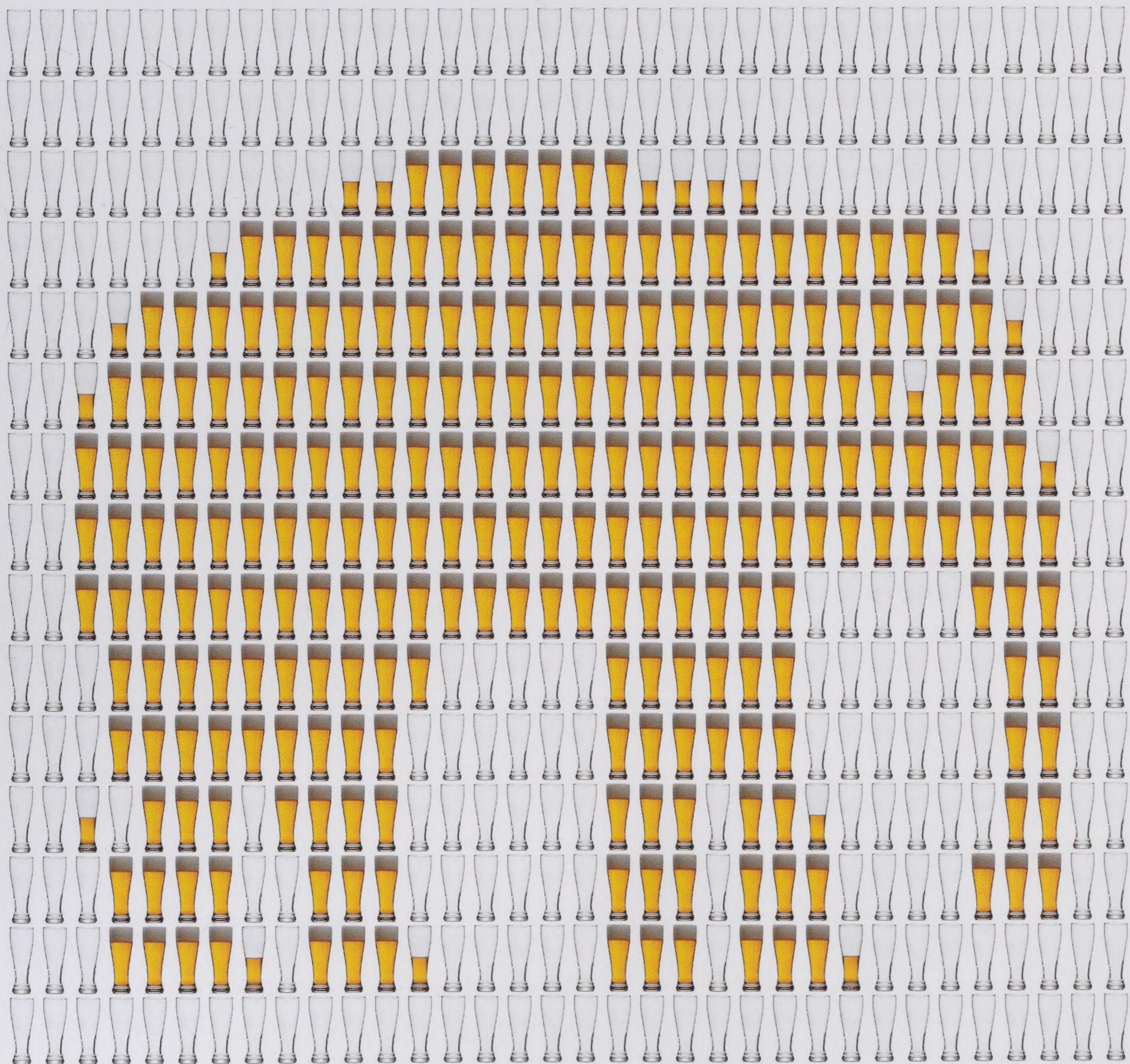
Technical Notes —

CAMERA: NIKON D750; **LENS:** 70-200 MM; **FOCAL LENGTH:** 155 MM;
ISO: 4,000; **EXPOSURE:** 1/800 SEC AT F/4.0

Share Your Photos!

Smithsonian Zoogoer welcomes FONZ members' submissions of photos taken at the Zoo. Please send photos to zoogoer@si.edu or post to @FONZNationalZoo on Twitter and Instagram, or @FriendsoftheNationalZoo on Facebook. Your photo may be featured on the Zoo View page.

Join the Club! Membership in the FONZ Photo Club is open to photographers of all skill levels. The group meets monthly to hear guest speakers and to share and discuss members' work. Learn more at fonz.org/photoclub.



Changing the world, one beer at a time.

That's right. You can make a difference by drinking beer! Come to Brew at the Zoo on July 21, where you can savor beers from 60 craft brewers and enjoy snacks and live music, all in the majestic setting of the Smithsonian's National Zoo. Proceeds support the Zoo's mission to save species. **Tickets are available to members on June 9 at fonz.org/brew.** So, join us for Brew at the Zoo, where drinking beer saves wildlife! *This is a 21+ rain-or-shine event.*



JULY 21, 6-9 P.M.



Friends of the National Zoo, PO Box 37012, MRC 5516, NW, Washington, DC 20013-7012, www.fonz.org



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Thank you for being a FONZ member.

Your membership supports animal care, science, conservation, and more.

GRAPES WITH THE APES
Thursday, September 1st, 6-9 p.m.
Smithsonian's National Zoo

This event is 21 and over. Rain or shine.

Raise your glass to wildlife conservation at Friends of the National Zoo's wine tasting event, Grapes With the Apes. Sample wines from the area's best vintners, enjoy live music, and learn about great apes and our efforts to protect them. Proceeds support the Zoo's mission to save species. It's a full-bodied experience you're sure to enjoy!

Tickets go on sale to members first, July 21 at [fonz.org/grapes](https://www.fonz.org/grapes)